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DRAFT FIVE YEAR PLAN
1978-83

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INTRODUCTION

The Planning Commission presented the Draft Five Year Plan for 1978—83 to the National Development Council at its meeting in New Delhi on 18th and 19th March, 1978. At the end of two days deliberations the Council passed a Resolution which is reproduced on the next page.

The Planning Commission believes that people and organisations throughout the country, both within and outside the Government, will find this draft of assistance in promoting a closer understanding of the problems that face the Nation at its present stage of development. It is hoped that these problems and their solutions will be widely discussed and that a consensus will emerge on plan objectives and priorities and on the policies and strategies requires to implement them.

Above all, the Commission hopes that the Draft Plan will help to develop the strong national will that is needed to meet the many challenges that lie ahead.

18 April, 1978.

D. T. LAKDAWALA

Resolution adopted by the National Development Council at its meeting held on March 18/19, 1978

The National Development Council met on March 18/19, 1978 under the chairmanship of Prime Minister to discuss the document *Draft Five Year Plan* 1978—83, prepared by the Planning Commission.

The Council approved the objectives of removal of unemployment, reduction in poverty and inequalities and continued progress towards self-reliance and generally welcomes the proposals in the Draft Plan in furtherance of these objectives. The Council approved the corresponding increased allocations for agriculture, rural development, irrigation, flood control and power and village and small-scale industries. The Council emphasised that these larger allocations alone would not benefit poorer sections of the people unless necessary institutional and administrative changes are made to ensure that benefits do indeed reach those for whom they are intended. Attention was especially drawn in this connection to the importance of speeding up the implementation of land reforms and of mobilising peasant organisations for this purpose.

While commending the emphasis in the document on the Minimum Needs Programme, the Council recognised that the public distribution system covering essential articles of mass consumption needs to be expanded and strengthened without any delay.

The projections of employment opportunities indicated in the Plan were discussed and it was agreed that these should be reviewed in detail in consultation with the State Governments.

The NDC drew pointed attention to the need for making effective changes in administrative and other systems to ensure the success of plan objectives, especially the employment objective and the objective of narrowing down inequalities. The reasons why targets set in the past could not be fulfilled should be fully analysed and corrective actions taken.

The importance of ensuring that the private sector conforms to the national objectives was also emphasised.

It was agreed that the Planning Commission would hold discussions with the States in regard to the details of the Draft Plan, especially the State Plans.

The NDC welcomed the larger role the Draft Plan assigns to the State Governments in development planning and execution. Fiscal arrangements, which would reflect this development, need to be further discussed having regard to the constitutional provisions. A Committee of the NDC would be formed for this purpose. The Committee would, *inter alia,* review the Gadgil formula and the scope of Centrally sponsored schemes in the Plan.

After further discussions with the State Governments, the Plan for 1978—83 would be presented for approval to the NDC at a subsequent meeting. Before this meeting the Report of the Seventh Finance Commission would have been received and taken into consideration.

SUMMARY OF CONTENTS

Part I

		Page
Chapter 1 :	The plan in Outline . . .	1

Part II

Chapter 2 :	The Five Year Production Plan in Perspective . . .	35
Chapter 3 :	Financial Resources . . .	56
Chapter 4 :	Employment and Manpower . . .	81
Chapter 5 :	A Revised Minimum Needs Programme . . .	106
Chapter 6 :	Development of Backward Areas . . .	110
Chapter 7 :	Environmental Planning and Coordination . . .	117
Chapter 8 :	Planning, Implementation, Monitoring and Evaluation . . .	119

Part III

Chapter 9 :	Agriculture and Rural Development . . .	129
Chapter 10 :	Energy . . .	162
Chapter 11 :	Village and Small Industries . . .	176
Chapter 12 :	Industry and Minerals . . .	184
Chapter 13 :	Transport and Communications . . .	206
Chapter 14 :	Education . . .	219
Chapter 15 :	Health and Family Welfare .	230
Chapter 16 :	Urban Development, Housing and Water Supply . . .	243
Chapter 17 :	Social Welfare and Nutrition .	250
Chapter 18 :	Development of Backward Classes .	254
Chapter 19 :	Science and Technology .	256
Chapter 20 :	Other Programmes .	274

CONTENTS

PART I

	Page
CHAPTER 1 : THE PLAN IN OUTLINE	
Review	1
Unemployment, Poverty and Inequality	2
A New Development Strategy	3
Agriculture	4
Cottage and Small Scale Industries	4
Area Planning for Integrated Rural Development	4
Provision of Minimum Needs	5
The Plan Framework	5
Sectoral Growth	5
Rate of Growth	6
Financing the Plan	7
Public Sector Outlay	7
The Annual Plan 1978-79	8
Employment	9
Revised Minimum Needs Programme	10
Distributive Justice	11
Land Reform	11
Urban and Corporate Property	12
Distribution of Goods and Services	13
The Public Distribution System	13
The Distribution of Credit and Other Inputs	14
Consumption Credit and Debt Relief	14
Infrastructure and Social Services	14
Employment	14
Development of Backward Classes	14
Development of Backward Areas	15
Organization of the Poor	15
Fiscal Measures	15
Incomes Policy	15
Economic Policies	15
Prices	15
Monetary Policy	16
Trade	16
Sectoral Strategies, Targets and Outlays	17
Agriculture and Rural Development	19
Irrigation and Flood Control	20
Energy	21
Industries	22
Transport and Communications	26

		PAGE
	Social Services	27
	Science and Technology	29
	Planning and Implementation	30
	Rolling Plan	31
	Administrative Machinery	31
	Maintenance of Assets	31
	Participation	31

PART II

CHAPTER 2 :	THE FIVE YEAR PRODUCTION PLAN IN PERSPECTIVE	
	The Choice of the Growth Rates	35
	The Basis of Production Planning	36
	Agriculture	38
	Other Sectors	42
	Major Perspective Projections	47
	The Conservation Perspective	47
	The Demographic Perspective	48
	The Prospect for the Reduction of Poverty	50
CHAPTER 3 :	FINANCIAL RESOURCES	
	Financing of the Public Sector Plan	56
	Saving and Investment	62
	Balance of Payments	65
CHAPTER 4 :	EMPLOYMENT AND MANPOWER	
	Labour Force and Work Force	81
	Unemployment	81
	Sectoral Employment	82
	Organised Employment	82
	Unorganised Employment	83
	Recent Trends	83
	The Scenario in 1983 with Present Trends	83
	Employment Outlook	84
	Overall	84
	Educated Manpower	84
	Women	85
	Employment Policy	86
	Overall	86
	Educated Manpower	88
	Women	89
CHAPTER 5 :	A REVISED MINIMUM NEEDS PROGRAMME	
	Elementary Education	107
	Adult Education	107
	Rural Health	108
	Rural Water Supply	108
	Rural Roads	108
	Rural Electrification	109
	Housing for Landless Rural Labour	109

PAGE

Environmental Improvement of Urban Slums . . . 109
Nutrition Programme . . . 109

CHAPTER 6 : DEVELOPMENT OF BACKWARD AREAS

Nature of Backwardness . . . 110
Evaluation of Fifth Plan Approach . . . 110
Approach to Development, 1978—83 . . . 111

CHAPTER 7 : ENVIRONMENTAL PLANNING AND COORDINATION 117—118

CHAPTER 8 : PLANNING, IMPLEMENTATION, MONITORING AND EVALUATION

Planning . . . 119
Implementation, Monitoring and Evaluation . . . 121

PART III

CHAPTER 9 : AGRICULTURE AND RURAL DEVELOPMENT

Main Approach . . . 129
Directions of Growth . . . 129
Land Reforms . . . 131
Land Utilisation . . . 132
Crop Production . . . 133
Inputs . . . 134
Irrigation . . . 134
Major and Medium Irrigation . . . 134
Minor Irrigation . . . 136
Command Area Development . . . 139
Flood Control . . . 140
Manures and Fertilisers . . . 141
Seeds . . . 142
Plant Protection . . . 142
Mechanisation . . . 143
Research and Education . . . 143
Animal Husbandry and Dairying . . . 144
Fisheries . . . 147
Forestry . . . 149
Services and Infrastructure . . . 151
Agricultural Credit . . . 151
Cooperation . . . 151
Storage and Ware-housing . . . 152
Agro Processing . . . 153
Agricultural Marketing . . . 153
Agricultural Administration and Extension . . . 153
Rural Development . . . 154
Integrated Rural Development . . . 154
Sub-Plans for Tribal Areas . . . 156
Hill Area Development . . . 158
Desert Development . . . 158
Women's Programme . . . 159
Area Development : Planning and Implementation . . . 159
Block-level Planning . . . 160

PAGE

District-level Planning . . . 160
State Plan . . . 160
Machinery for Planning . . . 160
Special Problem Areas . . . 160
Planning for Integration of Rural Urban Growth . . . 160
Panchayati Raj . . . 161

CHAPTER 10 : ENERGY :

Energy . . . 162
Power . . . 163
Coal . . . 166
Petroleum . . . 168

CHAPTER 11 : VILLAGE AND SMALL INDUSTRIES

Review of Progress . . . 176
Five-Year Plan, 1978—83 . . . 177
Credit Policy . . . 177
Arrangements for Coordination . . . 177
Marketing . . . 178
Training Facilities . . . 178
Technology and Resources . . . 178
Subsidies . . . 178
Plan Outlay . . . 179
Programmes of Development . . . 179
Handloom Industry . . . 179
Powerlooms . . . 180
Khadi and Rural Industries . . . 180
Small-Scale Industries . . . 180
Industrial Estates . . . 181
Handicrafts . . . 181
Sericulture . . . 181
Coir Industry . . . 181

CHAPTER 12 : INDUSTRY AND MINERALS

Growth of Industry—A Review . . . 184
Policy in Five Year Plan, 1978—83 . . . 186
Industrial Programmes . . . 189
Iron & Steel . . . 189
Iron Ore . . . 189
Non-ferrous Metals . . . 189
Engineering Industries . . . 189
Fertilizers . . . 190
Pesticides . . . 191
Petro-chemicals . . . 191
Drugs & Pharmaceuticals . . . 191
Cotton Textiles . . . 192
Jute Textiles . . . 193

		PAGE
	Paper & Newsprint	194
	Cement	194
	Sugar	194
	Programmes Relating to Atomic Energy	195
CHAPTER 13 :	TRANSPORT AND COMMUNICATIONS	
	Transport Policy	206
	Railways	207
	Roads	209
	Road Transport	210
	Major Ports	211
	Minor Ports	211
	Lighthouses & Lightships	212
	Inland Water Transport	212
	Shipping	212
	Communications	213
	Civil Aviation	214
	Tourism	215
	Meteorology	216
	Information Services, Plan Publicity and Broadcasting	217
CHAPTER 14 :	EDUCATION	
	The Policy Frame	219
	Elementary Education	219
	Adult Education	221
	Secondary Education	222
	General Higher Education	223
	Technical Education	224
	Other Programmes and Art and Culture	224
	Implementation	224
CHAPTER 15 :	HEALTH AND FAMILY WELFARE	
	Health	230
	A Policy Frame	230
	Rural Health	231
	Control of Communicable Diseases	232
	Hospital Beds & Dispensaries	232
	Medical Education, Research & Training	233
	Indigenous Systems of Medicine and Homoeopathy	233
	Other Programmes	234
	Family Welfare	234
	Review of Fifth Plan	234
	Five Year Plan, 1978—83	235
	Services and Supplies	236
	Training	236
	Research and Evaluation	236
	India Population Project	236
	Mass Media and Extension Education	236

		PAGE
	Maternity and Child Health	237
	Organisation for Implementation	237
CHAPTER 16 :	URBAN DEVELOPMENT, HOUSING & WATER SUPPLY	
	Urban Development	243
	Housing	245
	Water Supply and Sewage	248
CHAPTER 17 :	SOCIAL WELFARE AND NUTRITION	
	Social Welfare	250
	Nutrition	252
CHAPTER 18 :	DEVELOPMENT OF BACKWARD CLASSES	
	Review of Previous Plans	254
	Policy and Strategy for the Plan, 1978—83	254
	Development Programmes	255
CHAPTER 19 :	SCIENCE AND TECHNOLOGY	
	S & T Infrastructure	256
	Policy Objectives	256
	S & T Planning and Implementation	258
	Industrial Research, Design & Development	260
	Indigenous and Foreign Technology—Self-reliance	260
	Basic Research—Universities	261
	Coordinated Development of Test Facilities	262
	R & D efforts at the State level	262
	Sector-wise Programmes and Activities	263
CHAPTER 20 :	OTHER PROGRAMMES	
	Labour & Labour Welfare	274
	Rehabilitation	275

PART I

Chapter 1

The Plan In Outline

Review

Thirty years after independence, twenty-seven since we set out with the First Five Year Plan "to translate..... the goals of social and economic policy prescribed in the Directive Principles of the Constitution..... into a national programme based upon the assessment of needs and resources", it is clearly time to take stock of how far we have come towards attaining these goals, to note the achievements and the shortcomings, so that we may better chart the course of the nation's future development.

1.2 It is a cause of legitimate national pride that over this period a stagnant and dependent economy has been modernised and made more self-reliant. A modest rate of growth of per capita income has been maintained despite the growth of population. On the other hand, the numbers of unemployed and underemployed are still very high and more than 40 per cent of the population lives below the poverty line.

1.3 Agricultural output has risen throughout this period, though slowly. While the production of foodgrains has increased to levels which make us virtually self-sufficient at our current low levels of per capita consumption, in two key cash crops, oil seeds and occasionally cotton, we continue to rely to a significant degree on imports. Though the area under irrigation has doubled in the period of planning, we are far short of developing the full potential. Yields generally have grown slowly, despite the dramatic increase in the productivity of wheat in the sixties; per capita agricultural production has remained stagnant. This has proved to be a constraint on the pace of general economic development, and fluctuations in agricultural output have often led to unplanned cutbacks in public investment and bouts of inflation, both of which had a depressing effect on growth.

1.4 A major achievement has been the diversification and expansion of India's industrial capability with the public sector playing a leading role. The country is self-sufficient in all consumer goods and in basic commodities like steel and cement, while the capacity of other industries like fertilizers is rapidly expanding. The growth of capital goods production has been particularly impressive, and India can now sustain the likely growth of most of her industries, whether textiles, food processing or cement or chemical, metallurgical and engineering industries, power or transport, by the domestic production of the capital goods needed with only marginal imports. However, this pace of industrialisation has not been bought cheaply. The concentration of economic power has increased, in the sense that. within the corporate sector, the assets of bigger corporations have increased more rapidly. The expansion of large scale industries has failed to absorb a significant proportion of the increment to the labour force, and led in some cases to a loss of income for the rural poor engaged in cottage industries like textiles, leather, pottery etc.

1.5 The development of productive capacity has also been marked in the area of energy sources. The output of India's primary fuel source—coal—has been expanded more than three-fold and much of the industry has been modernised. The intensive search for oil and gas, launched in the late fifties, has achieved notable success both on and off shore. An efficient complex of refineries, pipelines, storage and distribution has been developed and the country is moving into the petro-chemicals age. A large infra-structure has been built to sustain this sub-continental economy : the network of irrigation storage works and canals, hydro and thermal power generation, regional power grids, a largely electrified and dieselised railway system, national and state highways on which a rapidly growing road transport fleet can operate and a telecommunications system covering most urban centres and linking India with the world.

1.6 The development of agriculture and modern industry has stimulated the growth of banking, insurance and commerce, and required the matching expansion and modernisation of ports, shipping and internal and external air services. However, the major beneficiaries especially of the banking system, have been the wealthier part of the population, both in urban and rural areas, and the vast majority have barely been touched.

1.7 India's foreign trade has expanded rapidly in recent years, the commodity composition of her exports having changed with emphasis on manufactures and mineral ores. Of late the inflow of remittances has also been very high. Because of these factors and the substantial measure of import substitution that has been attained, our foreign exchange situation has improved to a stage where it is not a major constraint on development. However, the successes in import substitution and export promotion were achieved in some cases at an unduly high cost.

1.8 The pattern of industrial development that has emerged obviously reflects the structure of effective demand, which is determined by the distribution of incomes. An unduly large share of resources is thus absorbed in production which relates directly or indirectly to maintaining or improving the living standards of the higher income groups. The demand of this relatively small class, not only for a few visible items of conspicuous consumption but for the outlay on high quality housing and urban amenities, aviation and superior travel facilities, telephone services, and so on sustains a large part of the existing industrial structure. This means that the further expansion of

industry is limited by the narrowness of the market. As a result, further import substitution of consumer goods or capital goods cannot, at the current level of demand, afford any great impetus for continued industrial growth.

1.9 Significant results have been achieved in agricultural research, and Indian scientists and technologists are working in many areas on the frontiers of today's knowledge, as in the development of nuclear power and the use of space technology for communications and resource development. For further industrial and scientific advance, with growing competence in adaptive research and development, we need only a selective import of technology. It is not clear, however, that all the areas of research have the social and economic relevance that would justify the application of our limited resources to these fields. Small and cottage industries and other rural activities have not received the research and development support that they required. The expansion of output of scientists, engineers and technicians has been rapid since the late fifties; supply has actually outstripped the domestic demand for some categories of trained personnel.

1.10 The average life expectancy of the Indian people rose from 32 years in the forties to around 46 years in the sixties owing to the extinction of smallpox and reduction in the incidence of malaria and cholera as well as a marked fall in infant mortality. However, the level of malnutrition is still very high and not enough has been done by way of protected water supply and sanitation in rural areas to provide protection against water-borne diseases.

1.11 The enrolment of students at the elementary level has risen from 32 per cent to 69 per cent and at secondary level from 5 per cent to 25 per cent of the relevant age-groups in the period of planning. But we have still to attain the goal of universal primary education which the Constitution had enjoined should be done within ten years. The number of drop-outs is very high indeed, reflecting economic pressures and the rural poor's view of the relevance of the education given to their children. The degree of adult illiteracy continues to be massive; the present estimate being that over 200 million of the adult population is unlettered. The enrolment at the stage of higher education, which rose from 416,000 a year in 1950-51 to over 3 million currently, has led to a high degree of wastage and the growing unemployment of graduates.

1.12 Much of the benefits from infrastructure have accrued largely to the relatively affluent. Our pattern of investment, particularly in the provision of social infrastructure, has been biased in favour of urban areas. Thus, though the output of doctors is numerically adequate and the urban well-to-do have reasonable hospitals to go to, the rural areas continue to be poorly served in respect of access to medical services. Many areas of the country remain backward and regional disparities in agricultural development have increased. Many segments of the population, like the scheduled castes and tribes, have not shared fully in the benefits of growth.

*See Part II, Chapter 4.

1.13 This assessment of India's economic development over a quarter of a century of planning has indicated some fundamental failures and it is on account of these that the need has arisen for a re-appraisal of the development strategy. We must face the fact that the most important objectives of planning have not been achieved, the most cherished goals seem to be almost as distant today as when we set out on the road to planned development. These aims—implicit in all our plans, but more explicitly stated in the later formulations of our development strategy—are universally accepted by the Indian people : they are the achievement of full employment, the eradication of poverty and the creation of a more equal society.

UNEMPLOYMENT, POVERTY AND INEQUALITY

1.14 Unemployment, poverty and inequality are related phenomena, so that any success in solving one of these problems would imply some success in solving the others.

1.15 Conceptual difficulties in estimating unemployment have stood in the way of an adequate appreciation of the problem and hindered the evolution of appropriate remedies. The quantitative estimates of the backlog of unemployment and of employment potential indicated in the Second and Third Plans were misleading. As a result no specific targets for reducing unemployment were spelt out in the Fourth or Fifth Plan. The hope expressed in the revised Fifth Plan that increments to the labour force could be absorbed in gainful employment within the plan period has clearly not been realised.

1.16 Unemployment in the Indian situation takes different forms. There are those who are chronically unemployed and those who can find employment at some times but not at others. The first category of unemployment can be measured in terms of the number of persons wholly unemployed, which was estimated to have been around 4 million persons in 1973. The second category of unemployment better measured in terms of man-days, was equivalent to 18.6 million persons being unemployed on a typical day.*

1.17 Between 1971 and 1978, when the labour force increased by 35 million, non-agricultural activities absorbed only 9 million, about half in the organised sector and half in the informal sector. The general pattern of man-power deployment in the country is that only 10 to 11 per cent of the increase in the labour force finds employment in the organised sector, while the rest drifts into part-time employment in the rural areas or the informal sector of urban industry and trade, or becomes chronically unemployed. This lack of employment obviously reflects the waste of a potentially productive resource.

1.18 Less than full employment of the rural labour force is attributable not only to seasonal employment of farm labour, and chronic under-employment of the

landless in areas of high population pressure, (aggravated by the uneven distribution of water resources, varying holding sizes and tenurial conditions) but also to the progressive displacement of craftsmen and artisans by competitive modern industry. Urban unemployment, likewise covers not only workers laid off by declining industries, new entrants to the labour force and migrant workers from surrounding rural areas, but a whole mass of self-employed persons and casual workers in the "informal sector" eking out a precarious livelihood. Both rural and urban poverty are identifiable with low productivity, low wages, and intermittent employment, as well as chronic lack of work. Thus, the solution to the problem of under-employment is not to be seen in terms of creating so many million specific "jobs" in five or ten years. The task is to create through development additional employment apportunities to match, as closely as possible, with the location, skills and idle time of the unemployed. In doing so, planning has to take into account uneven regional development and the constraints on the mobility of labour, whether economic or social.

1.19 The concept of poverty is somewhat wider and includes not merely those who are unemployed and poor but also those who, fully or partly employed, earn very little because of low productivity or low wages. Attempts have been made to measure the extent of poverty in India, and depending on the norms used, the 40—60 per cent of the population fall below the minimum acceptable standard. According to a recent estimate using norms of calorie consumption, the percentage of population below the poverty line in 1977-78 may be projected at 48 per cent in rural areas and 41 per cent in urban areas. The total number of the poor, so defined, would be about 290 million. About 160 million of these fall below 75 per cent of the poverty line.* Though these estimates are debatable, and the trends in the incidence of poverty in recent years are not clear, it cannot be doubted that we have a long way to go to ensure a tolerable standard of living for the large numbers of the poor and the destitute.

1.20 The prevalence of poverty and inequality, virtually unchanged over the years, can be seen most clearly in the conditions of life of the two disadvantaged groups in our society, the Scheduled Castes and the Scheduled Tribes. The social disabilities from which large numbers of Harijans continue to suffer in many parts of the country are in a large part connected with their economic status and the lack of bargaining power which marks their role as landless agricultural workers in a situation of overall labour surplus. For 'development' to have some meaning, the living standards of these two groups, and their economic and social status must be seen to have risen significantly : so far they have been only marginally involved in the process of development.

1.21 Trends in the distribution of income and wealth are difficult to discern, but the evidence of persistence of gross inequalities is clear. Analysis of consumption expenditure† shows that in 1973-74 the lowest 20 per cent accounted for 9.5 per cent of total consumption in rural areas while the highest 20 per cent accounted for 38 per cent. For urban areas the corresponding figures were 9.2 per cent and 40 per cent. The concentration ratios for the two distributions were 0.27 and 0.30. The inequality of incomes for both groups would be greater than consumption inequalities.

1.22 The distribution of assets has recently been surveyed comprehensively.** The results for urban households have not yet been published. But for rural households it shows that 20 per cent of households, each having less than Rs. 1,000 of assets, account for less than 1 per cent of all rural assets, while 4 per cent with asset-values of Rs. 50,000 or more own over 30 per cent.

A NEW DEVELOPMENT STRATEGY

1.23 An effective strategy for development requires that :

(a) The objectives to be achieved are clearly formulated, and where there are multiple objectives, they are ranked in order of importance; and if objectives conflict, the trade-off between them should be determined.

(b) resource allocations are made to sub-serve the priorities indicated by the objectives, and these allocations are backed by appropriate economic and social policies.

(c) the selected strategy is pursued consistently over a period of time sufficient to establish its success or failure.

1.24 In the next phase of development it will no longer be appropriate, in the light of our past experience to formulate the principal objectives of a particular plan period merely in relation to a specified target of growth for the economy. What matters is not the precise rate of increase in the national product that is achieved in five or ten years, but whether we can ensure within a specified time-frame a measurable increase in the welfare of the millions of the poor.

1.25 It is proposed, therefore, that the principal objectives of planning should now be defined as achieving within a period of ten years :

(i) the removal of unemployment and significant under-employment;

(ii) an appreciable rise in the standard of living of the poorest sections of the population;

(iii) provision by the State of some of the basic needs of the people in these income groups, like clean drinking water, adult literacy, elementary education, health care, rural roads, rural housing for the landless and minimum services for the urban slums.

*See Part II, Chapter 2.

†National Sample Survey.—28th Round.

**All India Debt and Investment Survey 1971-72 (RBI).

This Plan aims at considerable progress towards achieving these goals.

These primary objectives should be attained while

(iv) achieving a higher rate of growth of the economy than in the past ;

(v) moving towards a significant reduction in the present disparities of incomes and wealth ; and

(vi) ensuring the country's continued progress towards self-reliance.

Agriculture

1.26 The employment objective depends crucially on increased labour absorption in agriculture and allied activities. This means increasing the productivity of available land through irrigation, multiple cropping and improved technology. The main thrust of the planning strategy, therefore, would be to expand the area under irrigation as rapidly as may be possible, and to develop cropping patterns and agricultural practices which optimise the use of land and water resources. Detailed agricultural plans would need to be drawn by regions and sub-regions, based on the full exploitation of the water resources in the command areas of irrigation projects, and on the principle of water conservation and management in rainfed areas, which would enable us to break out of the constricting historical trend rate of growth of around 2 per cent per annum. Fortunately the agricultural development potential today is greater than at any time in the past, in terms of availability of improved seed, modern cultural practices, applicable research results and farmers' awareness of and access to all physical inputs and credit. The new Plan would provide for massive investments in expanding the rural infrastructure, covering not only irrigation and supply of seed and fertiliser but also expansion of credit, storage and marketing.

1.27 To maximise employment in agriculture it is necessary not only to provide for the infrastructure and inputs which will increase physical productivity, but also (i) to push forward the implementation of land re-distribution programmes and schemes for the consolidation of holdings ; and (ii) to regulate the growth of farm mechanisation to ensure maximum labour use consistent with optimum land and water utilisation.

1.28 Improved productivity and employment intensity can be achieved not merely in the production of cereals and cash crops but in animal husbandry, horticulture, forestry and fisheries, where the scope for expansion is even higher.

1.29 A marked increase in agricultural employment should lead to significant growth in secondary employment in rural areas in distribution and transport, and in tertiary employment in other economic activities generated by the growth in rural income.

Cottage & Small Scale Industries

1.30 After agriculture, household and small-scale industries producing consumer goods for mass consumption hold out the greatest potential for employment. This is a sector which has received inadequate attention in earlier plans. The planning strategy would aim at protection of the existing livelihood of rural artisans and a substantial increase in the employment content of the rural industrial sector. It would seek to improve the quality of production, increase productivity, reduce costs and expand the market.

1.31 Some rural industries like handlooms and handicrafts, can be viable, and even competitive in export markets, given organisation, credit-supply, small improvements in techniques, design and marketing assistance. The output and employment of these industries can be substantially expanded. The employment in a number of other rural trades can be stabilised or expanded.

1.32 The share of the small-scale sector, excluding household industires, fell from 19.5 per cent of the income arising from all industrial production in 1968 to 16 per cent in 1976. This trend has to be arrested and reversed by a vigorous programme of promotion of small industries.

Area Planning for Integrated Rural Development

1.33 To achieve the employment objectives of this Plan, development programmes have to be made area-specific to a much greater extent than in the past. Area planning implies close identification of activities suitable to a particular area and capable of absorbing local labour surpluses. Area planning also implies a much more intimate involvement of the people whom it is hoped to benefit, both in the formulation and in the implementation of development plans.

1.34 Some major investments which have regional implications, like large-scale irrigation, power and transport must necessarily remain outside the scope of planning for limited areas. But the bulk of investments on agriculture, minor irrigation, animal husbandry, fishing, forestry, marketing or processing, cottage and small industries, and local infrastructure and social services including water supply, housing, health, education, sanitation, local transport, etc., are clearly amenable to planning at the local level. Whether the appropriate planning level is the District, Taluka, Development Block or a cluster of villages requires further consideration ; it is possible that there should be a hierarchy of planning decisions at the different levels. The most appropriate unit for employment planning, with emphasis on agricultural productivity would be the Development Block. The preparation of such plans will require an inventory of resources and skills and knowledge about the nature of unemployment in the area. The plans should identify projects and programmes for realising the development potential, and cover the location of centres for the supply of economic and social services.

Provision of Minimum Needs

1.35 Given the difficulty of raising the incomes of the lowest income classes adequately to ensure minimum consumption standards, it is necessary to supplement the outlay on general economic development through sectoral programmes by specific programmes of direct transfers of basic services to the target population group. This, and the economic and social policies required to alleviate poverty and reduce inequalities, are dealt with in a later section.

The Plan Framework

1.36 The quantitative framework upon which this plan is based is a consistency model *i.e.* a description of the economy in terms of a set of relationships between different sectors, between income and consumption, between production and employment etc. Such models have also been the basis for earlier plans. The special features of the present planning model are related to the proposed objectives and development strategy. In building the model particular attention was paid to the analysis of production possibilities and input requirements in agriculture. The employment objective was reflected in the special treatment of certain labour intensive village and small industry sectors and the detailed calculations of employment generation. The requirements of goods for consumption were estimated separately for rural and urban areas, and for the poor and non-poor, so that the implications of the development strategy for production planning are fully taken into account. The requirements of goods for investment allowed for the new pattern of investment outlays.

1.37 The overall plan size projected for 1978—83 is Rs. 116,240 crores. Of this the public sector outlay is Rs. 69,380 crores.

Sectoral Growth

1.38 The following table indicates the sectoral composition of gross value added in 1977-78 and 1982-83 and the percentage growth by sectors projected over this period.

Table 1.1: Sectoral Growth Pattern: 77-78 to 82-83.

Sl. No.	Sector	Share in Value Added		Gorwth rates %	
		1977-78	1982-83	Value Added	Output
(0)	(1)	(2)	(3)	(4)	(5)
1.	Agriculture . . .	42.50	38.71	2.76	3.98
2.	Mining & Manuf. .	18.47	18.76	5.03	6.92
3.	Electricity . .	1.71	2.14	9.55	10.80
4.	Construction . .	5.74	7.64	10.09	10.55
5.	Transport . . .	14.97	4.96	4.65	6.24
6.	Services . . .	26.61	27.79	5.61	6.01

1.39 The table below indicates the planned outputs of certain important items in the Plan.

Table 1.2 : Output Projections of Principal Commodities—1982-83

Sl. No.	Item	Unit	1977-78	1978—83
(0)	(1)	(2)	(3)	(4)
1.	Foodgrains	Mill. Tonnes	121.00	140.48 to 144.48
2.	Sugarcane	Mill. Tonnes	156.90	188.00
3.	Cotton	Lakh bales (170 Kg. each)	64.30	81.50 to 92.50
4.	Oilseeds (major)	Lakh tonnes	92.00	112.00 to 115.00
5.	Coal	Mill. Tonnes	103.20	149.00
6.	Crude Petroleum	Mill. Tonnes	10.77	18.00
7.	Cloth-Mill Sector	Mill. Mtrs.	4200.00	4600.00
	—Decentralised Sector	"	5200.00	7600.00
8.	Nitrogenous Fertilisers (N)	Th. Tonnes	2060.00	4100.00
9.	Phosphatic Fertilisers (P_2O_5)	Th. Tonnes	660.00	1125.00
10.	Paper & Paper Boards	Th. Tonnes	900.00	1250.00
11.	Cement	Mill. Tonnes	19.20	29.00 to 30.00
12.	Mild Steel	Mill. Tonnes	7.73	11.80
13.	Aluminium	Th. Tonnes	180.00	300.00
14.	Commercial Vehicles	Th. Numbers	40.00	65.00
15.	Electricity Generation	G.W.H.	100.00	167.00

1.40 At the time of formulating a Five Year Plan, controversy tends to centre around two magnitudes : the growth rate postulated for the economy as a whole, and the proposed size of the public sector outlay.

Rate of Growth

1.41 The overall growth rate projected in the Plan is 4.7 per cent per annum. This may seem low in relation to targets of 5 to 7 per cent projected in earlier Plans, though the actual achievement has varied between 3.2 per cent and 3.8 per cent. The main reasons why planned rates could not be achieved were (a) over—optimistic assumptions regarding agricultural productivity, (b) under-estimation of the time required to build and commission major irrigation and power projects and large scale industries, (c) over-estimation of efficiency of operating and hence the output and return from investments in all sectors, and (d) economic crisis caused by shortage of foreign exchange or by inflation.

1.42 The growth rate of 4.7 per cent emerges as the result of two considerations which have guided the Commission. First, that the pattern of investment and therefore of income generation in the Plan should be such as to redistribute incomes in favour of the poor. Secondly, the physical targets both for agriculture and for industry should be projected with a greater degree of realism than in the past.

1.43 It has generally come to be realised that the concept of growth rate as a measure of economic development has considerable limitations. The rate of growth measures the expansion of the size of the economy over a particular period but not necessarily its development potential for the future. Nor does it measure the welfare of the masses of the people, since it is unrelated to the distribution of the national income as between different classes. Other criteria may thus have to be adopted for the measurement of welfare. While it is true that a more rapid expansion of the economy will generally make it easier to increase the welfare of the poor, it is not necessary that the allocation of resources required to reach the highest achievable rate of growth of the economy at any point of time will be optimal from the point of view of the desired distribution of incomes. Thus a lower overall growth rate with more employment may be preferable to the theoretically highest achievable growth rate.

1.44 In most of our plans a shortfall in domestic savings has led either to unplanned cutbacks in investment or to inflation. The Plan for the next five years involves a substantial enhancement of incomes in the hands of the poor. If these incomes are not to be eroded by price increases, it is essential that the Plan be formulated on the basis of realistic assumptions about savings. The rate of gross savings (excluding assets created by own account labour) is estimated to be 19.8 per cent in 1977-78. This Plan has been formulated on the premise that this savings rate will rise to 23.4 per cent by 1982-83. The most important component—household savings—is assumed to increase from 16.4 per cent of the disposable household income in 1977-78 to 17.4 per cent in 1982-83. It is necessary to note here, however, that if as a result of the distributive measures contemplated in the Plan, the savings propensity goes down, steps will have to be taken to enhance it. Public savings should increase from 30 per cent of public sector income to 41 per cent. The postulated increase in domestic savings is attainable, but only if vigorous policies are followed to restrain inessential consumption. In the opinion of the Commission it will not be realistic to assume an increase in the rate of domestic savings of any higher order.

1.45 A large part of the increased production of foodgrains and cash crops in the first three plan periods was due to the extension of the area of cultivation. The scope for further extension has been limited since the sixties, largely to the expansion of irrigation coverage whereby multiple cropping can be increased. All other increases in output must come from improvement of yields. Except in the case of wheat, there has been no really dramatic increase in yields in Indian agriculture, and the further growth in wheat production will be much slower than in the immediate past. Taking the historical trend, the growth rate of foodgrains production was 1.85 per cent per annum in the period 1967 to 1977 which appears to be significantly lower than in the earlier period. Overall the rate of growth in agricultural output has been 2.13 per cent per annum in the period 1967—77. The new Plan aims at a growth of around 4 per cent per annum in agricultural output between 1978 and 1983. This assumes besides improved yields, an increase of cropping intensity from 1.22 to 1.26 largely as a result of addition of about 17 million hectares in the irrigation potential. The rate of growth in the industrial sector, which has averaged only 4.3 per cent per annum in the recent past, is projected in the Plan to grow at around 7 per cent. This has been estimated on the basis of the quantitative model by checking the projections against industry-wise calculations of demand capacity and production for all major industries.

1.46 If the rate of increase in agricultural production can be sustained at a higher level than 4 per cent compound, if the time for construction and commissioning of irrigation and power projects can be reduced, and if the capacity utilisation in both the consumer and capital goods sectors can be quickly increased, if may be possible for the economy to achieve a higher growth rate than the 4.7 per cent per annum assumed for the next five years. Further it is expected that after a period of transition to the new investment priorities, the development strategy will generate a higher growth potential, so that the average rate of growth in the period 1983—88 assumed in the perspective at 5.5 per cent per annum, could also be exceeded.

1.47 Corresponding to the growth rate of 5.5 per cent per annum in the period 1983—88, the principal

production targets adopted for determining sectoral programmes are :

Table 1.3: Selected Production Targets for 1987-88

Sl. No.	Head	1987-88
0	1	2
1.	Foodgrains	164-169 m.t.
2.	Sugarcane	225 m.t.
3.	Oilseeds (major)	136 lakh t.
4.	Coal	202 m.t.
5.	Nitrogenous Fertiliser(N)	6370 th t.
6.	Mild Steel (Domestic Demand)	154 m.t.
7.	Electricity Generation	265 G.W.H.

Financing the Plan

1.48 The Plan as a whole is proposed to be financed as below :

Table 1.4. Resources for the Five Year Plan 1978-83

Sl. No.	Head	Amount
(0)	(1)	(2)
		(Rs. crores)*
1.	Public sector savings	27,445
2.	Savings by financial institutions	1,970
3.	Savings of the private corporate sector	9,075
4.	Household savings **	62,365
5.	Net inflow from	
	(*a*) External assistance	3,955
	(*b*) Drawing on foreign exchange reserves	1,180
6.	Budgetary provision for current development outlay	10,250
	TOTAL	**116,240**

*All figures rounded off to nearest 5 crores.
**Excluding assets created by family labour.

1.49 Exports are estimated to rise from about Rs. 5,143 crores in 1976-77 to Rs. 7,750 crores in 1982-83. Imports are planned to increase from Rs. 5,074 crores to Rs. 10,500 crores. After allowing for a likely deceleration in the inflow of remittances within the Plan period, the balance of payments projections for the Plan are as below :

(Rs. crores)*

Trade		
Exports	34,000	
Imports	42,825	
Balance of trade		(—)8,825
Invisibles		
Services (Net)	3,460 2,015	
		(+)5,475
Debt Service		
Interest	(—)1,510	
Repayment	(—)2,920	
		(—)4,430
Assistance to other countries		(—)350
Other transactions		(—)1,070

*All figures rounded off to nearest 5 crores.

On this basis the gap in the balance of payments works out to Rs. 9,200 crores. It is expected that the gross inflow of aid over the Plan period will be about Rs. 8,020 crores. Higher levels of aid do not seem to be either feasible or desirable. The remaining gap of about Rs. 1,180 crores would be bridged by drawing down the country's foreign exchange reserves, which would be above Rs. 4,000 crores at the beginning of the Plan. The net inflow of external resources (including the use of reserves) would be less than 5 per cent of the Plan outlay.

PUBLIC SECTOR OUTLAY

1.50 The public sector outlay proposed is Rs. 69,380 crores. This represents 59.7 per cent of the total Plan outlay, and is proposed to be financed in the following manner :—

(Rs. crores)*

1.	Central and State government resources at 1977-78 rates of taxation	12,890
2.	Gross surplus of public enterprises at 1977-78 rates, tariffs etc.	10,295
3.	Additional resource mobilisation by the Centre	9,000
4.	Additional resource mobilisation by the States	4,000
5.	Market borrowings of Government, public enterprises etc.	15,985
6.	Small savings	3,150
7.	Central and State Provident Funds	2,950
8.	Term Loans of financial institutions (Net)	1,300
9.	Miscellaneous capital receipts (Net)	450
10.	External assistance (Net)	5,955
11.	Borrowing against utilisation of foreign exchange reserves	1,180
12.	Uncovered gap	2,225
	TOTAL	**69,380**

*All figures rounded off to nearest 5 crores.

1.51 It will be seen that nearly Rs. 54,000 crores are estimated to be available from the balances of current revenues of State and Central governments (after meeting non-plan expenditure) at current rates of taxation, from surpluses of Government, industrial and commercial enterprises, provident funds and other savings, term lending institutions, market borrowing and external assistance. In these computations non-plan outlays have been assumed to rise at 5% per annum. If prices remain stable the margin of 5% should be sufficient to meet not only normal year-to-year increases but also the cost of proper maintenance of assets created in earlier plans.

1.52 To cover the gap of Rs. 16,000 crores or so for financing the Plan outlay proposed, it is suggested that Rs. 13,000 crores may be mobilised by the States and the Centre by way of additional taxes and by raising the surpluses of their respective public enterprises. About the same amount is likely to be collected during the period 1974—79 on the basis of taxation in the first four years, 40% of it by enhancement of railway freights and fares, postal and telephone charges, electricity tariff and bus fares.

1.53 A major source of resources for the next Plan could be progressive reductions in subsidies at present paid by the Central Government. The return from investments in Central and State enterprises, is at present below the fair return allowed when fixing prices for the private sector, and should therefore be raised by economies and price adjustments to a post-tax level of about 10%. Water and power rates will need upward revision, in order to provide a reasonable return on the rising investments in these sectors. In view of the massive investments proposed to be made in agriculture and rural works of various kinds, earnest efforts must now be made to recover a part of the increased rural income for re-investment in the public sector. In view of the evidence of unequal distribution of rural assets (especially land) the equitable way of doing this would be through appropriately structured taxes on agricultural income or progressive surcharges on land revenue. Various forms of increased savings may be considered, such as increased contribution to provident funds, group insurance schemes and rural debentures. As regards taxation, besides examining the somewhat limited scope of enhancing the taxes on income and wealth and rates of commodity taxation, a part of the capital gains on developing urban land and property may be appropriated to the State treasuries.

1.54 Part of the gap remaining after resource mobilisation of this order might be set off against the planned import surplus. In preparing the Plan various possibilities have been examined of utilizing some of the expansion of the economy. The balance of payments exercises show that after leaving an adequate balance in hand for normal trading purposes, and against contingencies such as the need to import food (in the event of two succeeding bad harvests) we can afford to draw Rs. 1,000—1,500 crores from the reserves over the plan period. Obviously, foreign exchange can be used for development only through imports. To draw down reserves we have to plan for an import surplus. The sectoral outlays and production targets in the Plan for 1978—83 have been adjusted in order to achieve this end.

Central and State Plans

1.55 The allocation of the public sector outlay between the Central Plan and those of States and Union Territories will be worked out later this year, after :

(a) detailed formulation of five year plan sectoral programmes by the States and the Central Ministries;

(b) the estimation of expenditure in the 1978-79 Annual Plan which should be transferred to the non-Plan budgets of the Centre and the States;

(c) review of schemes in the agriculture, rural development, social service and other sectors, which were 'Centrally sponsored' in the Fifth Plan, to determine the coverage of such schemes in the next Plan; and

(d) recommendations of the Seventh Finance Commission on the devolution of resources to the States, and the decision of the Central Government on these recommendations.

1.56 The Planning Commission is reviewing the principles for the allocation of Central assistance to States for their plan outlays. Though almost every State has some reservations on the application of specific elements of the Gadgil Formula, it has on the whole served its purpose well. It can only be replaced if a different system of allocation which is more appropriate to the present requirements of planning is found to be generally acceptable.

THE ANNUAL PLAN 1978-79

1.57 Since it was necessary to re-order investment priorities as early as possible, it was decided to bring the Fifth Plan to an end a year before it was due, while formulating the new medium-term plan. The investment plan in the public sector for 1978-79, though drawn up in advance of the detailed formulation of the Plan for 1978—83 incorporates its priorities.

1.58 The following tables show :

(1) Sectoral outlays in the Plan for 1978-79 (Central and Total).

(2) Plans for States and Union Territories.

Table 1.5 : Outlays in the Plan for 1978-79

Sl. No.	Head of Development	Centre	Total
(0)	(1)	(2)	(3)
		(Rs. Crores)	
1.	Agriculture and allied programmes	871.62	1754.24
2.	Irrigation (Major & Medium)	5.97	1038.89
3.	Flood Control	17.45	126.71
4.	Power	243.71	2197.01
5.	Village and Small Industries	139.97	218.99
6.	Industry and Mining	2267.53	2414.20
7.	Transport and Communications	1328.36	1781.79
8.	Education	115.76	412.91
9.	Medical and Public Health	258.29	392.92
10.	Water Supply and Sanitation	62.70	337.88
11.	Housing	68.29	205.52
12.	Urban Development including State Capital Projects	44.63	133.49
13.	Backward Class Welfare	24.05	96.20
14.	Social Welfare	20.11	28.85
15.	Other Programmes and Services	195.78	350.81
16.	Hill and Tribal Areas and N.E.C.	—	159.04
	TOTAL	5664.22	11649.45

Table 1.6 : Annual Plan 1978-79 States and Union Territories

(Rs. Crores)

Sl. No.	States	1977-78 Approved Outlay	1977-78 Anticipated Expenditure	1978-79 Agreed Outlay
(0)	(1)	(2)	(3)	(4)
1.	Andhra Pradesh	368.75	383.03	449.00
2.	Assam	119.39	117.95	155.00
3.	Bihar	306.94	309.28	384.14
4.	Gujarat	291.58	293.49	335.00
5.	Haryana	154.40	167.95	210.00
6.	Himachal Pradesh	56.35	56.27	73.00
7.	Jammu & Kashmir	89.68	93.86	108.00
8.	Karnataka	241.50	245.66	309.00
9.	Kerala	141.52	154.01	176.00
10.	Madhya Pradesh	355.77	363.86	413.00
11.	Maharashtra	661.80	668.74	735.00
12.	Manipur	23.19	22.75	28.26
13.	Meghalaya	24.46	24.34	28.11
14.	Nagaland	19.27	20.16	24.53
15.	Orissa	154.00	154.51	191.00
16.	Punjab	265.50	212.00	260.00
17.	Rajasthan	175.30	197.56	235.00
18.	Sikkim	12.47	13.46	15.80
19.	Tamil Nadu	260.12	260.92	305.00
20.	Tripura	15.78	16.61	22.70
21.	Uttar Pradesh	654.75	681.79	755.00
22.	West Bengal	315.92	316.95	371.40
	TOTAL States	**4708.44**	**4775.15**	**5593.94**
Union Territories				
1.	Andaman & Nicobar Islands	8.29	8.29	10.44
2.	Arunachal Pradesh	14.13	15.41	23.40
3.	Chandigarh	11.04	10.26	12.12
4.	Dadra & Nagar Haveli	2.61	2.62	3.20
5.	Delhi	90.10	90.12	108.00
6.	Goa, Daman, Diu	21.06	23.53	27.50
7.	Lakshadweep	1.67	1.60	2.44
8.	Mizoram	11.07	11.26	16.65
9.	Pondicherry	8.43	8.41	10.50
	TOTAL U.T.	168.40	171.50	214.25
	GRAND TOTAL	**4876.84**	**4946.65**	**5798.10**

EMPLOYMENT

1.59 Since the growth of employment in large and medium industries is incapable of absorbing more than a small fraction of the labour force, the employment strategy of the Plan is:—

(a) To adopt an employment intensive sectoral planning;

(b) To regulate technological change to protect and enhance employment, and

(c) To promote area planning for full employment.

1.60 The pattern of growth and, therefore, the inter-sectoral allocations of investment and the determination of the output targets have been based explicity on the need to increase employment generation rapidly. Besides the employment augmenting capacity of irrigated agriculture and the largely expanded allied sector of dairying, forestry and fisheries, the Plan will generate employment through :—

(a) The expansion of infrastructure and social services, *e.g.*, road construction, electrification, water supply, rural schools and community health services;

(b) A large increase in the consumption of the poor; such consumption will create additional employment for wage goods which can be produced by labour-intensive methods.

1.61 The irrigation, power and housing programmes also imply a massive increase in construction activity

with a corresponding expansion of employment opportunities.

1.62 Studies in the choice of technology in sugar and textile sectors have been completed. Similar studies for other selected sectors are in progress. The criteria of choice and the policies to be applied have been indicated in the chapters on "Employment" and "Industries". These policies include reservation of fields of production for the household and small-scale sectors and differential excise protection. It is expected that in certain fields appropriate technologies can be developed to eliminate any existing cost disadvantage of smaller units altogether.

1.63 If the Plans of investment and production are fully implemented, it is estimated that employment opportunities of the following order would be created within the Plan period.

	Million man-years
1. Agriculture and allied sectors . . .	22.768
2. Mining	0.447
3. Manufacturing (including cottage industries) .	8.918
4. Construction and services	17.128
TOTAL	**49.261**

This implies that the expansion in the labour force of 30 million in the period 1978 to 1983 as well as a substantial part of the backlog of unemployment can be absorbed.

REVISED MINIMUM NEEDS PROGRAMME

1.64 Although a Minimum Needs approach to the alleviation of poverty was mooted in the Fifth Plan period, the outlay originally earmarked for this programme had to be reduced on account of the inflationary crisis of 1973—75, and amounted to about Rs. 800 crores only over the years 1974 to 1978. In this Plan the earlier list of basic needs *viz.*, supply of drinking water, provision of house-sites for the homeless, village access roads, elementary education for the rural poor, provision of rural health services, extension of rural electrification, environmental improvement of slums and nutrition for the undernourished—will be extended to include adult education. Various norms under the programme will be changed to improve the coverage and the outlay will be stepped up to Rs. 4,180 crores.

1.65 The Minimum Needs Programme for 1978—83 is summarised in Table 7 on Page 11.

1.66 The targets that this strategy aims at are :—

(a) *Elementary and Adult Education.*—About 32 million children will be covered, increasing the coverage of elementary education from 69 per cent of children in the age groups 6—14 to 90 per cent. Of the 100 million or so adult illiterates in the age group 15—35, an attempt will be to make 66 million literate by the end of the Plan.

(b) *Rural Health.*—It is intended that a community health worker and a trained dai will be provided for every 1,000 of the population as soon as possible. In addition to completing the backlog of construction of Primary Health Centres and Sub-Centre buildings by the end of the Plan, there will be one P.H.C. per block and 38,000 new Sub-Centres. In addition, 400 primary health centres will be upgraded into 30-bedded hospitals.

(c) *Drinking Water.*—All the villages, numbering one lakh, which were estimated in the past, to be lacking in safe drinking water supply, should have this facility by the end of the Plan.

(d) *Rural Roads.*—About half the villages with population of 1000 to 1500 would be linked by road; the other half would be covered in the next five years.

(e) *Rural Electrification.*—Besides strengthening the existing rural electrification system, approximately 40,000 villages will be electrified by 1982-83 as a part of a phased programme to cover at least 50 per cent of the villages in every State and Union Territory.

(f) *Housing and Urban Development.*—About 7 million landless labourers were provided with house sites in the Fifth Plan but no assistance for developing or building on them was provided. In the Plan about 8 million landless workers will benefit from a scheme for providing developed plots, a drinking water source for every 30 houses, sanitation and some assistance for materials. The scheme envisages all the manual work being contributed by the beneficiaries. In urban housing the programme of slum improvement will benefit about 13 million slum dwellers leaving about 18 million to be covered in the next Plan. Special emphasis will be given to housing for the economically weaker sections especially in the smaller towns. The thrust of the urban development strategy is to develop the smaller towns and to decongest the larger cities.

(g) *Nutrition.*—The coverage of mid-day meals scheme for under-nourished children and supplementary nutrition programme for mothers and infants will be preferentially extended to blocks which have a high proposition of scheduled castes and scheduled tribe population. The estimated numbers of additional beneficiaries would be 2.6 million children under the nutrition scheme and 4 million children under the mid-day meals scheme.

Table 1.7 : Targets and Outlay for Revised Minimum Needs Programme

Sl. No.	Item	Norms	Coverage 1978-83	Outlay 1978-83
(0)	(1)	(2)	(3)	(4)
				(Rs. crores)
1.	(*a*) Elementary Education	100%, coverage of children 6 to 14	90%	900
	(*b*) Adult Education	Coverage of all adults in age group 15-35	66%	200
2.	Rural Health	(*a*) 100% coverage by community health worker (sanitation, immunisation, simple remedies, referal services)	PHC 46%	490
		(*b*) Establishment of one primary health centre for every 50,000 population and one sub-centre for 5,000 population.	Sub-Centres 71%	
3.	Rural Water Supply	Coverage of all problem villages	100%	675
4.	Rural Roads	Linking up all villages with a population of 1000 or more	100% coverage of villages with population of 1500 and above and 50% coverage of villages with Pop. of 1000-1500.	800
5.	Rural Electrification	Supply of power to 50% of villages in each State/U.T.	40000 villages to be electrified.	250
6.	(*a*) House-sites for landless and rural housing	100% coverage for landless labour households.	About 45%	500
	(*b*) Environmental improvement of urban slums	Environmental improvement comprehending (a) expansion of water supply, (b) sewerage, (c) paving of streets, and (d) provisions of community latrines in slums areas. Areas inhabited by scheduled castes, particularly scavengers etc. to be given due priority.	13 million urban slum dwellers in large cities to benefit	190
7.	Nutrition Programme	1. Mid-day meals for one-fourth of children in age group 6-11 years.	About 4 million addl. children under MDM.	175
		2. Supplementary feeding programme for under-nourished children in the age group 0-6, pregnant women and nursing mothers in blocks with high concentration of SC/ST.	Addl. 2.6 million pre-school and nursing mothers under SNP	
			TOTAL :	4180

DISTRIBUTIVE JUSTICE

1.67 In a developing economy the instrument of taxation alone is ineffective in reducing disparities in income and property. Therefore a variety of other redistributive measures are necessary. These should influence, first of all, the existing distribution of assets, particularly agricultural land, urban real estate and corporate property. Secondly, public sector operations should steer the distribution of essential commodities, infrastructure facilities and social services in favour of low-income consumers. Thirdly, on the production side, the share of small farmers and small industry enterprises* in institutional credit and in the supply of material inputs needs to be increased, and their access to technical and marketing assistance improved. Fourthly, policies which minimise unemployment should be expected to reduce inequalities. And, finally, the rural and urban poor have to be organised. Their vigilance alone can ensure that the benefits of various laws, policies and schemes designed to benefit them do produce their intended effect.

Thus, in addition to fiscal measures, narrowly defined, a redistributive bias has to be built into the whole spectrum of production, distribution and employment policies and in the organisational effort of official and non-official agencies. This section presents a consolidated summary of the redistributive policies recommended in various Chapters of the Plan.

Land Reform

1.68 According to Reserve Bank data the concentration ratio of assets (mainly agricultural land) owned by rural households was 0.65 in 1961-62 and increased to 0.66 in 1971-72. The poorest 10 per cent of rural households owned only 0.1 per cent and the richest 10 per cent owned more than half of total assets in 1971-72 as well as 1961-62. These data show that up to the 60's the land reform measures

*In this section the term "small industries" comprises cottage, village and small-scale industries.

had no visible impact on the distribution of rural property. As on 31st July 1977, the estimated surplus area was only 5.32 million acres, the area "declared surplus" was 4.04 million acres, the area "taken over" by governments was 2.10 million acres, and the area actually distributed was only 1.29 million acres. Thus the distributed area remains less than one-fourth of the estimated surplus. The disconcerting fact is that the officially estimated surplus is a fraction of the area held in large ownership holdings as estimated from survey data @. The discrepancy between the "estimated surplus" area and the area roughly indicated as potential surplus by survey data may be due to varying definitions of surplus land in different States, the transfers made to evade ceilings, the failure to record or verify true surpluses or both.

1.69 The situation needs to be rectified so that the true surpluses may be identified and redistributed within a definite time period with renewed determination. It has, therefore, been proposed in the section on Land Reforms that the process of correcting land records and redistributing the true surplus be completed within five years. It would be necessary for this purpose that village committees, for which there is provision in the ceiling laws of many States, be reconstituted with adequate representation of potential beneficiaries. These committees should be empowered to correct land records, identify true surpluses and draw up redistribution plans for each village. These redistribution plans should be implemented subject to one appeal to be decided upon by tribunals within a fixed, short time period. Special legislation may have to be enacted, and machinery set up, to back this new procedure.

1.70 Land redistribution will increase employment in agriculture because small holdings systematically employ more labour per hectare than large holdings. And, there need be no loss of productivity per hectare because, given equal access to credit and material inputs, small farms yield more output per hectare than large farms.

1.71 It is the established policy that preference be given to landless households in the allotment of surplus land. Even with small holdings of a hectare or less, the landless families can cross the poverty line if the holdings are irrigated and income from crop production is supplemented by income from animal husbandry, fishery, forestry and cottage industry activities. Even the possession of small holdings will improve the social status of the landless, particularly scheduled castes and tribes, and enable them to have better access to other means of production.

1.72 Tenancy reform has often been conceived as independent of the legislation on ceilings. But it should be properly implemented as a part of the same redistributive process. Just as landless workers ought to be the prime claimants of surplus self-cultivated land, true occupying self-cultivating tenants and share-croppers should be the prime claimants of surplus leased-out land. The assurance of security of tenure, limited rent liability, and eventual ownership to real self-cultivating tenants and share-croppers will bring about an effective redistribution of leased-out land. The present tenancy legislation should be reviewed from this point of view and State Governments urged to implement it with a new resolve. Provisions in respect of the identification of tenants and in respect of the owners' right of resumption should be particularly reconsidered and revised where necessary.

Urban and Corporate Property

1.73 It is well-known that the concentration of corporate property has increased during the last decade. The assets of the top 20 business houses increased from about Rs. 2,500 crores to Rs. 4,500 crores between 1969 and 1975. It has also been shown in recent studies that four firms control more than half of the total sales in nine industries, including steel, petroleum, transport equipment, cement, synthetic fibres, paper, food products, cigarettes and rubber products. In the first two of these industries, production is concentrated mainly in the public sector. But in the last seven private houses control the bulk of production.

1.74 In order to reduce financial concentration it has been proposed in the Chapter on Industry that additional capacity be licensed for large industrial houses only after considering all alternatives of letting the new capacity be created by medium size business houses and/or the public sector. Policies under which large business houses are able to expand capacity if they locate it in backward areas or make export commitments should be carefully re-examined. In some industries economies of scale and size of the domestic market dictate that production be concentrated in one or a few units. But it is necessary that the Government should use its legal powers under the MRTP Act, and its power of representation on company boards, to prevent the abuses associated with the concentration of industrial power.

1.75 Modern large-scale industry is characterised by a fundamental alienation between work and property, wage income and profit income. This alienation generates chronic industrial strife. In Gandhian, socialist as well as progressive liberal thought there is a converging consensus that this strife can be minimised only if the modern corporation evolves as a socially responsible entity in which capital, labour and most of society reconcile their interests as effective partners in management and ownership.

1.76 In pursuit of this concept important movements have emerged and legislation has been enacted in many countries (including U.K., France and Ger-

@ According to the National Sample Survey (26th Round, 1971-72) the area owned in holdings of 30 acres or more was 57.81 million acres. Allowing for self-cultivation by surplus owners the potential surplus would be 21.51 million acres. Similarly the area owned in holdings of 50 acres or more was 25.87 million acres and after the self-cultivation deduction the potential surplus would be 8.37 million acres. The Guidelines of 1972 specified a ceiling of 10 to 18 acres for land with assured irrigation for two crops, 27 acres for land with irrigation with one crop and 54 acres for dryland.

many) to enable workers to become partners in the management and/or the equity of large enterprises. A Committee has been appointed by the Government of India to make recommendations about workers' participation in management. The terms of reference of the committee include the making of recommendations to enable workers to become shareholders in the equity of large companies in the public sector as well as the private sector. Appropriate policies will be formulated after the recommendations of the Committee are received.

1.77 As an analogue of land reform, urban land ceilings were enacted recently in order to limit the concentration of real estate ownership. The delay in following through the basic objectives of the legislation has retarded construction.

Distribution of Goods and Services

1.78 Besides land and urban property reform, policies to introduce discrimination in the flow of real income in favour of low income consumers and small producers are also essential. This discrimination is necessary and feasible in three areas :—

(a) in the distribution of essential consumption goods;

(b) in the distribution of credit and modern material inputs needed by small producers; and

(c) in the distribution of public goods, infrastructure and social services provided by the public sector.

The need for dualism in the distribution and pricing of inputs and essential goods arises because the free market allocates an unduly small share of the available supplies to low income consumers and small producers, particularly when supplies are short and prices rise. Therefore, the public sector has to pre-empt or procure a part of the supply and make it available to these vulnerable groups at reasonable prices. The supply not procured by the public sector can flow freely in the market to other non-priority consumers at free market prices.

The Public Distribution System

1.79 In the case of consumer goods, the public distribution system is already operative. It covers foodgrains, sugar, kerosene and controlled cloth. It is proposed to expand the coverage to include pulses and edible oil. Cooperative outlets are also to be encouraged to include in their operations, according to local demands, other consumer products such as salt, matches, tea, soap, common drugs, exercise books, ready-made garments and standard footwear. The total number of public distribution outlets will be increased particularly to serve the rural poor more adequately. The public distribution system does not necessarily improve the distribution of income but it helps to prevent a deterioration in distribution in inflationary conditions. Shortages of essential goods as well as monetary inflation can be highly regressive if a public distribution system does not prevent serious cuts in the consumption of the poor.

The Distribution of Credit and other Inputs

1.80 In the case of inputs, particularly credit with which inputs are purchased, the share of small producers in the total supply remains low. Given access to credit on similar terms small farmers and small producers in many industries are able to have productivity and costs comparable to those in large units. But such access is denied by free market forces. Therefore, it is essential that the expansion of institutional credit should continue and an increasing proportion of this credit be made available to small producers.

1.81 In the case of agricultural credit, in 1971-72 institutional credit (from Government, cooperatives, commercial banks etc.) accounted for about nearly 32 per cent of the outstanding cash dues of cultivators. In the commercial bank sector 12.2 per cent of the increase in gross bank credit in 1976-77 went to agriculture. As regards the share of small farmers (with two hectares or less) in rural credit, they obtained 31 per cent of the advances made by cooperatives and land development banks in 1975-76. In commercial bank credit their share was larger and amounted to about 46 per cent. Taking cooperatives and commercial banks credit together the share of small farmers is about 33 per cent.

1.82 This is a significant proportion but it has been proposed in the Chapter on Agriculture that it should be substantially increased so that the abject dependence of small farmers on money-lenders is minimised. The significance of the public credit system favouring small farmers is that it is a powerful means of reducing rural disparities in many ways. It eliminates the inequity of usury, it raises small farm incomes, and above all, it can bring about a radical change in the distribution of major non-land assets such as livestock and irrigation capacity.

1.83 Small farmers have very little by way of assets to offer as security; loans to them for productive purposes have to be advanced either against the security of assets to be financed by the loans, or where the amounts involved are small, on personal credit. Similar facilities should be made available to artisans.

1.84 Even if credit is available, the small farmers often suffer discrimination in the actual availability of fertilisers, tube-wells, pesticides, improved seeds and other inputs. Therefore, as credit availability for them is improved their access to material inputs and irrigation equipment should also be improved by building conscious biases in their favour in the public sector delivery systems.

1.85 Small industrial enterprises can also have larger incomes and assets if the public sector credit system makes an earmarked and increasing share of its credit available to them. The credit arrangements proposed to support the expanded small industry programmes are intended to serve this objective. The systems of extension, marketing, raw material supply

and hire purchase of equipment are being expanded and streamlined exclusively to serve small industries.

Consumption Credit and Debt Relief

1.86 Data show that in 1971-72 agricultural labourers and artisans had to depend on landlords, traders, money-lenders and other non-institutional sources for 90 to 95 per cent of their credit requirements. A substantial proportion of the borrowings of agricultural labour households is for meeting consumption needs. It is essential that the credit system should provide such households with consumption credit to cover periods in which returns from productive work are awaited. Apart from requirements of such households for fresh credit, steps will also have to be taken to mitigate the burdens imposed by their existing debt. Several States have taken measures for providing relief to poor households by imposing a moratorium on debt repayment. In some cases steps have also been taken to discharge or scale down debts. If poor households are to become independent these measures will have to be effectively implemented.

1.87 The establishment of such a credit structure would enable many poor households to break free of bondage and increase their earning power.

Infrastructure and Social Services

1.88 In the field of infrastructure and social services, the entire Revised Minimum Needs Programme aims at a significant expansion and re-allocation of expenditure on drinking water supply, electrification, road construction, health, education, nutrition, urban slum upgradation and housing assistance in favour of rural areas and the urban poor.

Employment

1.89 For those who are poor as well as unemployed, access to employment is the most vital need. Since the basic strategy of the Plan is to generate employment on a large scale a substantial degree of re-distribution will result. For dealing with the poverty of those who are occupied but poor, the strategy is to increase the productivity of small enterprise in industry and agriculture. In areas where employment opportunities are expanded, the real wages of rural workers will at least be stabilised despite demographic pressure. Where labour shortages develop they may even rise.

Development of Backward Classes

1.90 More than one fifth of the country's population consists of scheduled castes and scheduled tribes, residing in rural areas. They constitute the poorest section of the population. The scheduled tribes live mostly in well defined areas; these areas are relatively under-developed and poorly integrated with the rest of the economy. Scheduled castes are spread all over the country and generally constitute a substantial fraction of the population below the poverty line. They have few assets and are generally dependant on share-cropping or agricultural labour. Many scheduled caste communities suffer from the additional disability imposed by the practice of untouchability. Redistributive policies must pay special attention to those and other backward classes if it is to be successful. The approach in this Plan is to integrate provisions for assisting backward classes in the general development programmes.

1.91 The Plan includes a provision for special sub-plans for tribal areas. At present, around two-thirds of the tribal population is covered by such plans and in this Plan some further areas of tribal concentration will be added. There is also a substantial provision for integrated rural development in the Plan. The selection of blocks for area development and the choice of programmes will be made in a manner which would favour backward classes. Specifically all blocks with a scheduled caste population of 20% or more will be covered under the programme and a target group orientation of the kind that is found in the SFDA/MFAL scheme will be maintained in the choice of schemes in all blocks. Thus it is expected that a substantial part of the total provision for area development schemes will benefit backward classes. The programmes for subsidiary occupations and the rural credit programmes will also be oriented to enable them to purchase assets required to improve their economic and social status. They will also benefit from more vigorous implementation of land reform laws.

1.92 The Revised Minimum Needs Programmes envisage a substantial effort towards universal elementary education and adult education. The scheduled caste and scheduled tribe population is particularly backward in this regard. Hence, a vigorous implementation of this part of the RMNP will narrow the gap between backward classes and the rest of the population. A large proportion of the new facilities for primary education will be set up in areas with high concentration of backward classes, which at present have limited access to education. Similarly the principal beneficiaries of the provision of Rs. 500 crores for landless labourer housing in the RMNP will be the backward classes. Apart from these a bias in favour of backward classes is also built into the provisions in the RMNP for supplementary nutrition and the environmental improvement of slums.

1.93 Besides the benefits that would accrue to backward classes because of the orientation of general development programmes, the Plan includes a provision of Rs. 545 crores for special welfare schemes for backward classes. The major schemes included here cover the provision of scholarships, training centres to enable backward classes to compete effectively for government posts and other employment opportunities, and various grants and subsidies for agricultural activities, cottage industries and other trades.

1.94 Thus, this Plan includes substantial provisions to improve the economic and social status of backward classes and to increase their share of public consumption. Backward classes will benefit not merely from specific earmarked provision in general development programmes and from welfare schemes but also from the fact that, as labouring classes, they will be the principal beneficiaries of the employment orientation of the Plan. They will also gain from the

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proposals for promoting village industries and other subsidiary occupations.

Development of Backward Areas

1.95 A substantial part of the problem of poverty is due to the uneven levels of development in different parts of the country. Any attempt at redistribution on a national scale must imply a reduction in these inter-regional gaps in the levels of development, the standard of living and the quality of life. However, to be successful such an attempt has to form part of the general development strategy.

1.96 The approach to backward area development hitherto has been characterised by incentives for industrialisation on the one hand and problem-oriented special programmes on the other. The extent to which these measures have succeeded in evening out levels of development is uncertain. However, our experience with large industrial projects located in backward areas suggests that organised industry is not necessarily the sort of growth catalyst that backward areas need.

1.97 The approach in this Plan is to rely to a much greater extent on the development of agriculture, village and small industries, subsidiary occupations and related services through hill-area, tribal-area. Revised Minimum Needs and area development programmes referred to earlier.

Organisation of the Poor

1.98 Critical for the success of all redistributive laws, policies and programmes is that the poor be organised and made conscious of the benefits intended for them. Organised tenants have to see that the tenancy laws are implemented. Organisations of the landless have to see that surplus lands are indentified and distributed to them in accordance with the law within five years. Local leaders of the poor have to ensure that all area plans and sectoral plans designed for the benefit of their localities and target groups are effectively administered. The general lesson of the experience so far is that because of leakages in delivery systems and ineffective administration, rural programmes fail to improve the distribution of income. The Planning Commission is proposing a massive shift of resources in favour of rural areas with an in-built redistributive character in almost every programme. But whether the larger resources will have the desired equalising effect will depend on the extent to which the organised pressure of the beneficiaries counteracts the weaknesses of the administration and the opposition of vested interests.

Fiscal Measures

1.99 Non-fiscal policies have been discussed so far. But more progressive fiscal action would remain as important as ever. In the chapter on Financial Resources a large number of fiscal measures have been suggested to ensure that the burden of additional resource mobilisation falls equitably on different classes. In the field of direct taxation, wealth and agricultural taxes urgently need to be made more progressive, and taxes have to be levied on capital gains from land values. In the field of indirect taxation, the twin principles to which primacy should be given in reforming the rate structure are that small-scale intensive labour production and low income consumption should be given exemption or differential relief. All other production and consumption should be suitably taxed. The same twin principles should apply to subsidies. All subsidies have to be reviewed to see that they benefit small-scale production and low income consumption, those which do not serve these purposes have to be phased out.

Incomes Policy

1.100 In the context of the need to maintain price stability and to mobilise resources for investment in the public sector, a national policy of incomes is needed. Such a policy should cover wages, profits, rents and the income of the self-employed. The choice is to be made between using resources to enlarge the incomes of those who are propertied or employed and using them to mitigate unemployment. A national incomes policy is also required to lay down guidelines for achieving an acceptable disparity ratio. A Committee has been appointed by the Government to look into this issue

1.101 In deciding an incomes policy, the possibility of extending minimum wages legislation to the unorganised sector may be examined, but this should go hand in hand with measures for assuring increased employment. In the case of professions, trading and business incomes, redistribution can be affected through controls on expenditure on business accounts and imposition of ceilings on salaries.

1.102 It is self-evident that there is no single panacea for redistribution. But if the whole complex of policies recommended in various parts of the Plan are pursued in a coordinated manner with a redistributive bias, unemployment can be eliminated, the incidence of poverty can be substantially reduced and the indices of inequality in the distribution of income and poverty brought down in the next decade.

ECONOMIC POLICIES

Prices

1.103 Although some price fluctuations during the Plan period would be unavoidable, it should remain a primary aim of policy to operate the economy within a regime of stable prices while implementing the investment programme. The achievement of economic growth with price stability demands a degree of foresight, flexibility and determination in the formulation and implementation of economic policies that we have not been able to attain in the past. Price stability requires :

(a) Reasonable balance between aggregate demand and supply to be sustained through a mixture of fiscal and monetary policies;

(b) Providing for a steady increase in the supply of goods of essential mass consumption;

(c) Internally consistent policies dealing with prices of agricultural commodities, those of manufactures in the private and public sector and prices of various services.

1.104 Stabilisation policies for agricultural commodities will involve appropriate support prices, buffer stock operations and imports when necessary. The commodities to be covered under this policy would include not only rice and wheat but also cotton and jute. Subject to our financial and administrative capabilities it is desirable to add pulses and oil seeds to this group. The approach of the Agricultural Prices Commission to the determination of support prices of various commodities has been sound, and it is important in the interests of price stability that no price increase be given unless it is justified by a substantial rise in input prices. More attention needs to be paid to the fixing of relative prices of competing crops, to ensure that the distribution of acreage between them moves in the planned direction. However, it has to be recognised that in some cases the share of particular crops in the total cultivated area depends on technological changes which increase yield rather than relative prices.

1.105 In the case of manufactures price fixation should be limited to a few commodities where this is clearly required for maintaining overall price stability and orderly marketing for all such commodities, whether produced in the private or the public sector. A fair return on investment should be assured in determining administered prices. The concept of a fair return applies also to the pricing of services.

Monetary Policy

1.106 Although the new Plan is being launched with a year of relatively stable prices behind it, it is possible that inflationary pressure may develop during the course of the Plan. It is necessary, therefore, to monitor the balance between the aggregate demand for goods and aggregate supply and to relate the growth of the money supply to the growth of the net domestic product. There is need for caution in determining the permissible rate of growth of money supply particularly because the pattern of investments in the Plan will generate incomes among groups with a low savings potential.

1.107 The problem of curbing monetary expansion in the present phase of the Indian economy is that there are two major elements which are virtually outside our control, namely, the increase in money supply corresponding to inward remittances of foreign exchange, and the requirement of credit for financing the purchase of foodgrains when a surplus has to be procured in order to support prices. The problem is further enhanced by the need to support prices of commodities other than wheat and rice. The containment of the growth of money supply has then to operate only through two main levers viz. the regulation of bank credit to the commercial sector and the extent of the combined budgetary deficit of the Central and State Governments. The restriction of bank credit to industry tends to affect production, and the Government deficit can usually be reduced below the budgeted level only by curbing Plan outlays. A third method of countering the growth of money supply—viz. the stepping up of imports—is also available, but its scope is limited if the full range of necessary imports has already been planned. The coordination of fiscal and monetary policies, price policy in agriculture and the adjustment of administered prices over a wide range thus poses a challenge to the managers of the economy. The instrument that has to be developed to achieve a satisfactory management system for the economy is the aggregate monetary budget. It is suggested that such a budget should be prepared along with the financial budget (although it need not be made public) and should be reviewed quarterly. It is also necessary to develop better models for the short-term forecasting of economic trends and the data base for this purpose needs to be established early.

1.108 If despite the utmost care in plan formulation and economic management, grave imbalances develop between long-term expectation and short-term trends, it will be possible in the rolling plan system to review the various assumptions on which the plan targets and inter-sectoral plans have been determined, and necessary adjustments can be made at the time of the Annual Plan review.

Trade

1.109 The international environment in which the next Plan is being launched is more favourable than for any previous plan. India's relations with all neighbouring countries are good and may be expected to improve. It is reasonable to hope that our economic plans will not be upset by any international conflict, and that the draft on resources by way of requirements of national security will not increase to any significant extent. The outlook for the growth of India's international trade is on the whole favourable, despite the continuance of some uncertainty about the trend of world trade and the extent to which the developed countries as a whole may wish to restrict the import of certain commodities of interest to India. The diversification of India's trading pattern due to the development of the West Asian market, especially for engineering exports, is an added source of strength. The prospects for the growth of trade under India's bilateral agreements with a number of countries continue to be encouraging and increasingly the payment arrangements under these agreements may be liberalised. Provided that domestic prices can be kept reasonably stable, the competitiveness of India's exports of manufactures is likely to improve further, with increasing efficiency of Indian industry and continued high inflation rates in a number of western countries.

1.110 The system of linking the value of the rupee with that of a basket of currencies has proved effective in combining flexibility with a degree of stability. The selection of commodities for export promotion in the future should be mainly on the basis of dynamic comparative advantage, taking into account the domestic resource cost of the exportable commodity.

1.111 While strict controls on all foreign exchange transactions must continue, selective relaxation of trade controls, which has been initiated, is clearly warranted by the strength of our balance of payments position. However, such relaxation has to be consistent with other objectives of domestic policy such as protection of small industries.

1.112 The case for such relaxation is three-fold viz.,(a) to transform a part of our present foreign exchange reserves into resources for development, exploiting our ability now to take 'make or buy' decisions on economic grounds, (b) by cheaper imports to stimulate competitive exports and reduce industrial costs in the domestic economy, (c) to provide an element of competition in certain sectors of industry whose efficiency may be suffering on account of excessive protection. In assessing the availability of resources for development it has been assumed that the level of external assistance will in the next five years remain the same as currently. This implies that the current balance of trade will be turned into a substantial import surplus by the investments proposed in different sectors of the Plan. Aid will account for only about 5 per cent of the total Plan outlay and our development plans, therefore, are no longer critically dependent on the quantum of aid. So far as private foreign investment is concerned, we have never relied upon it as a major source of capital to augment domestic savings. While a substantial reliance on this form of external resource would not be desirable, selective investment in the Indian industry by foreign firms on terms which are not onerous offers possibilities of import of associated technology which we should be prepared to consider on the merits of individual proposals. These proposals would need to be carefully assessed in terms of costs and benefits to the Indian economy.

SECTORAL STRATEGIES, TARGETS AND OUTLAYS

1.113 The sectoral strategies, targets and outlays closely reflect the main strategy and the basic objectives of the Plan. Thus, in drawing up the Plan :

(a) the highest priority has been given to the sectors which generate the maximum employment and which have a significant impact on the standard of living of the poorest, like agriculture and allied activities, village, cottage and small industries and inputs like irrigation ; fertilisers and power, which are required to sustain them ;

(b) upgraded norms have been adopted in the Revised Minimum Needs Programme and, to the extent possible, programmes in sectors like communications, science and technology, housing, health and family welfare, education, social welfare and nutrition have been oriented to benefit the rural and urban poor ; and

(c) the objective of achieving self-reliance both technologically and by investment in sectors which will ensure that when necessary we can do without foreign aid, has been kept in view.

1.114 The sectoral outlays in the public sector plan are indicated below ; allocations in the Fifth Five Year Plan have been indicated for comparison.

Table 1.8: Sectoral Outlays

(Rs. crores)

Sl. No.	Sector	Fifth Plan 1974-79	%of total outlay	Plan 1978-83	% of total outlay	% increase in 1978-83 over Fifth Plan
(1)		(2)	(3)	(4)	(5)	(6)
I.	*Agriculture and allied activities*	**4302**	**11.0**	**86.00**	**12.4**	**99.5**
1.	Agriculture	3109		5800		
2.	Rural Development	743		2000		
3.	Hill and Tribal Area Development	450		800		
II.	*Irrigation and Flood Control*	**4226**	**10.7**	**9650**	**13.9**	**128.3**
1.	Major & Medium Irrigation	3089		7250		
2.	Minor Irrigation	792		1725		
3.	Flood Control	345		675		
III.	*Industry and Minerals (excluding energy)*	**7362**	**18.7**	**10350**	**14.9**	**40.6**
1.	Village and Small Scale	510		1410		
2.	Large and Medium	5297		7252		
3.	Fertilisers and Pesticides	1555		1688		
IV.	*Energy, Science and Technology*	**10219**	**26.2**	**20800**	**30.0**	**102.1**
1.	Power	7016		15750		
2.	Petroleum	1691		2550		
3.	Coal	1148		1850		
4.	Science and Technology	436		650		

(Rs. crores)

(1)	(2)	(3)	(4)	(5)	(6)
V. Transport and Communications	**6917**	**17.6**	**10562**	**15.3**	**53.6**
1. Railways	2202		3350		
2. P & T, Telecommunications	1267		2095		
3. Civil Aviation	297		700		
4. Ports and Shipping	1035		1115		
5. Road and Road Transport	1815		2923		
6. Information & Broadcasting and Publicity	122		183		
7. Others (IWT etc.)	179		259		
VI. Social Services	**6224**	**15.8**	**9355**	**13.5**	**30.1**
1. Education	1285		1955		
2. Health & Family Welfare	1179		2095		
3. Housing, Urban Development & Works	1189		2540		
4. Water Supply	971		1580		
5. Social Welfare and Nutrition	202		305		
6. Backward Classes and Harijan Welfare	327		545		
7. Others (Rehabilitation, Labour Welfare, etc. including unclassified).	1071*		335		
GRAND TOTAL	**39322**	**100.00**	**69380**	**100.00**	**76.4**

1.115 The outlay on Social Services in the Plan as a proportion of the total public sector plan outlay under states the priority given to this sector. Unlike outlays in sectors such as Industry and Mining, a large part of the outlay on Education, Health or Backward Classes Welfare in one plan period, consisting of recurring expenditure, becomes non-plan outlay at the end of the plan. Therefore, in judging the importance assigned to the social services, both plan and non-plan outlay should be considered together. For example, the following table shows the growth of Government expenditure on Education in the terminal years of Third, Fourth and Fifth Plans.

Table 1.9: Plan and Non-plan expenditure on education

(Rs. crores)

Year	Plan	Non-Plan	Total
(1)	(2)	(3)	(4)
1965-66	178	259	437
1973-74	225	1086	1311
1977-78	324	1991	2315

1.116 The table 1.10 gives an indication of the shift in emphasis in the Plan towards rural development as compared to the Fifth Plan :

Table 1.10: Estimated public sector plan outlay on rural Development

Sl. No.	Sector	Fifth Plan 1974-79	Plan 1978-83
(0)	(1)	(2)	(3)
1.	Agriculture and allied programme including minor irrigation*	4644	9525
2.	Irrigation and flood control	3434	7925
3.	Fertilisers and Pesticides	1555	1688
4.	Power for rural areas*	1676	3557
5.	Rural Roads	500	800
6.	Rural water supply	432	765
7.	Rural health & family welfare	729	1482
8.	Hill and tribal areas	450	800
9.	Rural education	846	1400
10.	Telecommunication and postal services	N.A.	311
11.	Nutrition	90	140
12.	Social welfare	10	32
13.	Traditional cottage and household industries*	330	1000
14.	Rural housing	55	500
	TOTAL RURAL OUTLAY	**14751**	**29925**
	TOTAL PLAN OUTLAY	**39322**	**69380**
	Rural outlays as % of total Plan outlay	37.5	43.1

*Excludes Institutional Finance.

*The outlays in this sector have been reclassified in the 1978-83 Plan and included under the outlays in the other sectors.

Agricultural and Rural Development

Agriculture

1.117 This sector will receive the highest priority, special attention being paid to the uplift of the small and marginal farmers and the landless labourers, especially the scheduled caste and scheduled tribe families. The strategy for crop production will be to increase the area under irrigation, gross cropped area and cropping intensity and ensure larger application of inputs. This will be backed by improved agronomic practices for higher efficiency through development and propagation of better seeds, a strengthened extension system, assured availability of credit and improved facilities for marketing, storage and processing. Land and tenancy reforms (dealt with in greater detail in Chapter I, Part III) and consolidation of holdings, an important pre-requisite to good water use, will be vigorously pursued. A policy of optimal land use will be adopted, involving integrated watershed management which covers measures for flood control, drainage, reclamation and reshaping of land, mixed cropping for marginal land and a silvi-pastoral approach for areas with low rainfall. Special attention will be paid to increasing the area under oilseeds, pulses and cotton, and the continuance of price incentives. As a result, a growth rate of nearly 4 per cent in the output of the agricultural sector is expected to be achieved during the Plan.

1.118 The 1982-83 targets for the various crops are as follows :

Total foodgrains (in tonnes) . . .	140.5—144.5
Sugarcane	188.0
Jute & Mesta (lakh bales each of 180 Kgs.)	85.6
Cotton (lakh bales each of 170 Kgs.)	81.5—92.5
Oilseeds (Lakh tonnes) . .	125.0

The higher levels of production possibilities for 1982-83 are based on better management of various inputs and somewhat better than average weather conditions.

Animal Husbandry, Dairying & Fisheries

1.119 The major policies that will be adopted would be to increase production of livestock products such as milk, eggs, poultry, wool and mutton, by improved methods of animal husbandry supported by a marketing structure based on a functional system of cooperatives similar to that adopted by the milk cooperative unions in Gujarat. Planned crossbreeding for improving the productivity of cows and draught power of bullocks, improving the buffalo stock and promotion of poultry in rural areas on a cooperative basis supported by marketing services are some of the important components of the strategy that will be adopted. Improved breeds of sheep for mutton and wool, goats and pigs will be developed by programmes of selective breeding and cross-breeding. To meet the large gap between the requirements and availability of fodder and feeds, the production of high yielding varieties of fodder crops as part of an integrated programme of crop husbandry in a mixed farming system will be given priority. A programme of plantation of fodder trees will be an important part of forestry. Cultivation of coarse grains for feeding livestock and the use of agricultural, and industrial wastes for compounded feeds will be encouraged. A massive programme for dairy development—Operation Flood II, an extension of Operation Flood I, will be started.

1.120 The fisheries programme will give special attention to family based labour intensive inland and brackish water fisheries and improving the harvesting from seas by stimulating, on an equitable basis, the growth of country boats, mechanised boats and deep sea trawlers. An adequate support of improved processing and marketing facilities will be provided. The 1982-83 targets for selected products are as follows :

Milk & milk products (million tonnes) . . .	35.5
Eggs (million number)	16,000
Wool (million Kgs. greasy)	38.00
Fish	
Inland (lakh tonnes)	12.00
Marine (lakh tonnes)	22.00

Forestry

1.121 The main thrust of the programme will be to accelerate production forestry and social forestry including farm forestry, giving due attention to the need for maintaining the ecological balance and protecting the environment. In tribal areas, the goal will be to see that the people's requirements of timber, fuel and fodder can be met on a sustained basis.

Integrated Rural Development

1.122 These agricultural programmes and the plans for cottage and village industries development will be integrated into a comprehensive programme of integrated rural development. This will require the preparation of detailed plans at the block level and their integration with State level plans. Out of the 5100 blocks in the country, about 3000 are covered by one or more of the special programmes, such as SFDA, DPAP and CAD. Two thousand of them will be chosen on the basis of accepted priorities for a programme of integrated rural development including rural works aimed at creating full employment. Blocks with more than twenty per cent scheduled caste population will be taken up as a first priority. During each year of the Plan, another 300 blocks will be added leaving 1600 blocks to be covered in the next five year period starting April 1983.

1.123 In implementing this programme, ways of overcoming constraints like labour immobility and lack of skills will be devised. This programme, which is central to the attack on the unemployment problem, will require active public participation and assistance from voluntary agencies.

Tribal Sub-Plan

1.124 The programmes for tribal areas will be intensified and extended to contiguous areas of 10,000

population, which have more than 50 per cent tribal people. Special attention will be paid to the weaker sections amongst the tribal population.

Rural Credit and Cooperation

1.125 The volume of credit is proposed to be stepped up sharply covering a wide diversity of activities in the agricultural sector, rural electrification and rural industries, but with an increasingly large share of the credit going to the poorer sections of the rural population. In addition to the cooperatives, loans will be available from the ARDC, commercial banks and the REC. Reorganisation of the primary societies into multipurpose societies to provide, besides credit, technical guidance, inputs and processing and marketing assistance will be completed expeditiously.

Target groups and minimum needs

1.126 The focus of all these programmes of agriculture and allied activities will be the weakest sections of the rural population—the landless labourer, the artisan and the small/marginal farmer. In order to see that the benefits of these programmes do reach the intended beneficiaries, it is intended to try and ensure that in all the institutions through which these programmes are implemented such as land reforms committees, corporations and credit giving institutions, these weaker sections are adequately represented and they operate as organised groups.

1.127 The total and sub-sectoral outlays for the various programmes are given below. This is only the direct public sector outlay. In addition, substantial additional funds are expected to be contributed by institutions such as ARDC, commercial banks and cooperative credit societies.

Table 1.11: Outlays for Agriculture and Rural Development

(Rs. crores)

Sl. No.	Sector	Fifth Plan 1974-79	Plan 1978-83
(0)	(1)	(2)	(3)
I.	*Agriculture and allied activities* .	**3109**	**5800**
1.	Agricultural Research & Education	210	425
2.	Agricultural Production . .	575	1125
3.	Land Reforms	163	350
4.	Soil Conservation . . .	221	450
5.	Food Storage & Processing . .	123	150
6.	Animal Husandry & Dairying .	438	825
7.	Fisheries	150	400
8.	Forestry	206	450
9.	Investment in agricultural financial institutions	520	1000
10.	Community Development & Panchayati Raj . . .	127	150
11.	Cooperation . . .	376	475
II.	*Rural Development* . . .	**1193**	**2800**
1.	Special programmes for rual development	537	1550
2.	Command Area Development .	206	450
3.	Hill and Tribal Area Development	450	800
	GRAND TOTAL . . .	4302	8600

Irrigation and Flood Control

Irrigation

1.128 The main support to the agricultural programme in the Plan is a large step up in the irrigation potential—17 million hectares as against 8.6 million hectares created in the first 4 years of the Fifth Plan. Of these, 9 million will be as a result of minor irrigation schemes, 7 million through ground water development and the remaining 2 million from surface irrigation projects. Approximately 8 million hectares of potential will be created by major and medium irrigation projects. The main constraints in increasing these targets are the technical and implementational limitations rather than resources.

The highest importance will be attached to :

(a) getting full utilisation of the potential already created ;

(b) expeditious completion of on-going projects ;

(c) proper maintenance and operation of the existing irrigation systems ;

(d) ensuring that the smaller farmers get their fair share of water ; and

(e) settlement of inter-state river disputes so that projects utilising the water potential can be started expeditiously.

In order to make optimal use of water, the data base has to be strengthened so that large and medium projects involving inter and inter-basin transfer of water can be taken up. It is, therefore, proposed to set up a machinery for monitoring water flows and carry out detailed surveys, using ground based and remote sensing techniques.

1.129. In minor irrigation, apart from a careful assessment of ground-water potential so as to minimise wasteful expenditure and prevent over-exploitation, special attention will be paid to coordination of these programmes with rural electrification schemes, conjunctive use of surface and ground water and maximising the use of institutional credit.

Flood Control

1.130. The highest priority will be attached to expenditious completion of the on-going schemes and maintenance of the existing systems. The information base required for preparing a comprehensive and optimised national flood control master plan is proposed to be improved and the detailed plan with its components in the State Plan on basin-wise basis will be ready in the next few years.

1.131. The proposed 1978—83 outlays for irrigation and flood control are as follows :

Table 1.12: Outlays for Irrigation and Flood Control

(Rs. crores)

Sl. No.	Head	Fifth Plan 1974-79	Plan 1978-83
(0)	(1)	(2)	(3)
1.	Major and Medium Irrigation .	3089	7250
2.	Minor Irrigation	792	1725
3.	Flood control	345	675
	TOTAL	**4226**	**9650**

Energy

Power

1.132 High priority is attached to meeting the growing demand for power and wiping out the back-log. Because of the highly capital intensive nature of the power programme, this will require an increase in outlay of about Rs. 8,700 crores, by far the highest in any sector. In order to meet the estimated electricity consumption of 128.8 billion units in the terminal year of the Plan, an addition of about 18,500 MW of generating capacity is projected in the next five years, taking the country's total installed capacity to about 44,500 MW by the end of the Plan. Projects have already been cleared of funds provided for start in 1978-79 to cover this entire additional capacity. Coal based thermal stations will account for the bulk of the addition to capacity in the Plan period. In the spatial distribution of thermal stations, pithead locations will be preferred to the extent possible. While the need to tap the country's hydro protential is recognised and funds have been, provided for both on-going and new hydro schemes, the growth of hydro generation will inevitably be relatively slow on account of the long construction time involved. Besides completion of the Madras Atomic Power Station and commissioning of the first unit at Narora, a start will be made on one more nuclear power station in the Plan period. Thus, out of about 18,500 MW to be added about 13,000 will be thermal, 4550 hydro and 925 nuclear power. The Plan also provides for advance action of new schemes required to meet the power demand anticipated beyond 1983.

1.133 Having regard to the capital intensive nature of power development and the massive investments needed on large thermal and hydel projects which benefit more than one State, Central role in power generation will be enlarged further in the next five years. Apart from two super thermal stations taken up in the Fifth Plan, work will commence on three other such stations ; selected major hydro-electric schemes of regional benefit may also be taken up. Central generation is expected to account for about 10 per cent of the total generation in 1982-83.

1.134 Effort will be made in the coming five years to strengthen the transmission systems and achieve effective regional grid operation. The programme includes construction of a 400 KV transmission net work and establishment of load despatch facilities at the national and the regional levels. Attention will also be given to the utilisation of thermal capacity and reduction of losses in transmission and distribution.

1.135 Rural electrification will receive added emphasis. Twenty lakh pump sets and one lakh villages will be energised during the period 1978-83 as against nine lakh pump sets and 80,000 villages in the last four years. In order to funnel more funds for rural electrification a new scheme has been evolved for joint financing by Rural Electrification Corporation, Agricultural Refinance and Development Corporation and commercial banks.

1.136. Steps will be taken in consultation with the State Governments to improve the organisational capability of the State Electricity Boards on whom the primary responsibility to implement the large power programme will devolve, by functional restructuring of the management and a greater degree of professionalisation among the staff. A high level committee is also being set up to make recommendations for rationalising the tariff structure and improving the working of the Boards.

Petroleum

1.137 Oil exploration will be intensified. With the prospect that world oil supplies may fall short of demand in the closing decades of this country, resulting in oil prices rising sharply it is vital that a dependable inventory is drawn up of the country's oil reservoirs. The prognestic estimates are that about two-thirds of the oil reserves are located in off-shore sedimentary basins. Seismic surveys and exploratory drilling will, therefore, be carried out in all the off-shore regions including Andaman & Nicobar Islands. In the case of explorations in on-shore areas the tempo in both the eastern and the western regions, which are known to be of high potential for oil will be maintained. A somewhat more cautious approach will be adopted in other areas where the risks are relatively high.

1.138 The development of the Bombay High and bassein structures will be completed in the next two to three years and the production capability developed to reach a peak of 12.5 million tonnes per year. The pipelines to take oil and gas from those fields to Uran at the mainland will have been laid before the next monsoon. Facilities for crude stabilisation and gas fractionation and pipelines from Uran to Trombay for refining the crude locally or shipment from Butcher Island to other refineries, are being established.

1.139 The oil production policy in the next few years will be weighed in favour of conservation of our limited resources. Thus, production both off-shore and on-shore may have to be kept below technically feasible levels.

1.140 The commissioning of the Mathura and Bongaigaon refineries and completion of expansion of Gujarat refinery will take the total refining capacity of the country to 37.45 million tonnes per year by 1980-81. Work on the Salaya-Koyali-Mathura pipeline to transport crude oil to the Gujarat and Mathura refineries will be completed by that time. This will mean that with some increase in import of petroleum products, there should be sufficient refining capacity in the country to meet the demand till the end of the Plan. Having regard, however, to the need to have adequate refining capacity and secondary processing facilities and the gestation period for creating the facilities, funds have also been provided for advance action.

Coal

1.141 With the rapid expansion of thermal power generation, steel and other industries, the demand for coal will rise sharply in the coming years. While

India has fairly large reserves of low grade coal, reserves of usable coking coal are limited, as a measure of conservation therefore, import of low ash coking coal in significant quantities is proposed. The demand for coal in 1982-83 is estimated at 150.5 million tonnes, as against 103 million tonnes in 1977-78. The target for indigenous production will be 149 million tonnes of which 144 million tonnes will be contributed by mines in the public sector. The balance of the demand will be met by import of coking coal. The large increase in domestic production in the next five years will be achieved by utilising fully the capacity of the existing mines and the mines under construction and by a judicious choice of new mining projects, such as open-case mines, which have a relatively short gestation period.

1.142 The total outlay on these three sectors is as follows :

Table 1.13: Outlays in the Energy Sector

Sl. No.	Head	Fifth Plan 1974-79	Plan 1978-83
(1)	(2)	(3)	(4)
			(Rs. crores)
1.	Power	7016	15750
2.	Petroleum	1691	2550
3.	Coal	1148	1850
	TOTAL	**9,855**	**20,150**

Industries

Industrial Policy

1.143 While the basic objectives of five-year plan are unlikely to vary significantly from plan to plan, the strategy and pattern of investment will need to change so as to reflect the prevailing socio-economic situation in which the plan is being formulated. In the new Five Year Plan, the highest priority attached to tackling the problems of employment and poverty and providing minimum needs clearly call for an investment strategy which preempts resources for sectors such as agriculture and allied activities, irrigation, cottage, village & small industries. Investment in the organised industrial sector with its high capital to employment ratio, must, therefore, get a lower level of priority except to the extent that such investment is necessary to support the priority sectors.

1.144 The industrial strategy adopted in the Plan is thus to :

(a) make the fullest use of existing capacity. In many fields, consumers, intermediate and capital goods industries are currently operating at well below capacity, e.g. engineering, textile, sugar;

(b) employ technologies which have a low capital to output ratio, provided production costs are not adversely affected to any significant extent. This will call for a review and if possible for an expansion of the list of industries reserved for the small scale and cottage sector. Substantial investments in infra-structure, credit and assistance in various forms will be provided to support the growth of this sector ;

(c) conserve scarce non-renewable resources such as coking coal and other minerals of which we have relatively low reserves ;

(d) use the foreign exchange reserves. This will require a planned gap between demand and supply to be met by imports. Generally, industrial investments in the public sector and private sector will have to be based, more than in the past, on a comparison of costs of production with the economic cost of imports. At no point, however, will the gap be allowed to grow to a point where it exceeds a reasonable proportion of the total international trade in that commodity. To balance this, the drive for export of labour intensive manufactured goods like handlooms, leather goods, readymade garments and engineering products, where we are in a strong competitive position, will be intensified ;

(e) reduce the concentration of economic power in the corporate private sector, through a mix of policy, regulatory and organisational measures;

(f) take timely steps through injection of finance of management or by modification of Government policies to minimise the incidence of sickness in private companies; and

(g) reduce production costs through a combination of measures such as exposing domestic industry to a limited degree of competition from imports and by ensuring that, where economies of scale are significant, only units of an economic size are put up.

1.145 The large step-up in public sector outlay contemplated will, it is expected, contribute to a rapid growth of demand. The spare capacity that exists in many sectors for sophisticated capital and intermediate goods will be better utilised and the increased demand for the simpler capital goods like pumps, motors and a wide range of consumer goods will be met by a rapid growth in the cottage and small scale sector. Where, however, investments are necessary to support the new areas of priority, e.g. power plant machinery, coal, fertilisers and cement, adequate funds will be provided. While the public sector will dominate the growth in these and other areas, the private sector will have a significant role to play. Many of the constraints which affected the growth rate of industrial production during the Fifth Plan, such as shortages of transport, coal and essential imported raw materials have now disappeared. Vigorous measures are proposed to be taken to minimise the power shortage. If, as is expected, the rate of inflation continues to be lower than in other countries, the export prospects will become brighter. Given this background, it is expected that the projected growth rate of 7 per cent industrial production will be achieved if not exceeded.

Village and Small Industries

1.146. As a major contributor to the planned growth of employment, this sector will receive very high priority. In this sector, like irrigation, resources are not the constraint. Based on past experience, it is the capacity to absorb more funds, given the magnitude of the organisational, managerial and training effort needed, which limits the growth of the sector. Experience shows that people are anxious to become self-employed and work hard provided they are given the requisite assistance financially, raw materials and guidance in areas like marketing and technology.

1.147. The integrated rural development programme envisages the creation of detailed block level programme for full employment. These will identify the scope for setting up traditional and other small industries taking into account such factors as skill levels, local raw material resources and markets. The attempt will be to concentrate on a few viable industries rather than spread the effort thinly.

1.148. In all the rural industries programmes, it is the landless labourer, artisan, small farmer and those belonging to the backward classes who will be the target beneficiary.

The development effort will be mounted on many fronts :—

(a) *Reservation of Industries*

1.149. A wide range of industries is already reserved for this sector. This list may be increased and enforcement will be made stricter. In the case of handlooms, the maximum feasible programme has been attempted. If in practice it develops faster, suitable measures will be taken to curb the growth of the power loom and mill sector.

(b) *Coordinated Growth*

1.150. To minimise the number of contact points that entrepreneurs have to deal with, there will be a single district industries centre (DICs) in each district from which the services and inputs required by the entrepreneur, e.g. technical and marketing assistance, credit, raw materials and so on will be available. For household and cottage industries, apart from the VLW's, there will be cells at the block level where similar but the more limited range of facilities that cottage industries need will be available.

(c) *Science and Technology*

1.151. There is considerable scope for developing new products and improving and adapting processes and techniques so as to raise the productivity, reduce the cost and improve the quality of the products of the cottage and village sector of industries. The DICs and block level cells could well be the channels through which these inputs would flow. Research and technology transfer to this Sector will be given much greater impetus in the plan.

(d) *Credit and Loans*

1.152 Besides stepping up substantially the outlay, the extension of the margin money scheme to small business including service industries and retail outlets is being considered. The resources of the state level corporations will be strengthened for operating the hire purchase schemes.

(e) *Marketing*

1.153 The major effort here is to remove the middle man and to provide through the cooperative sector a remunerative outlet especially for the products of cottage industries. Assistance for these and other small industries will be provided by setting up testing facilities and retail outlets (which could also be manned by the rural or semi-urban educated unemployed). In Government and public sector purchases, preference will be given to the products of this sector. The opportunities for product diversification like polyester khadi will be explored so that earning levels of the weavers can be increased.

(f) *Training*

1.154 In several fields such as carpet and handloom weaving, training facilities will be expanded substantially. Inputs for proto-type development centres, ITIs, tool rooms etc. will be stepped up.

(g) *Technical assistance/facilities*

1.155 A wide range of inputs is required for the development of these industries beginning from help in skill improvement on the job to trouble shooting, running processing centres etc. In many cases, the supply of standard raw materials, for instance seasoned wood for craftsmen, at reasonable prices is critical to the success of this class of industries. Industrial estates with sheds and other infrastructure facilities will also be a major promotional tool.

(h) *Fiscal measures*

1.156 Suitable reliefs from excise duty on the products of village and small industries will assist in making products of this sector more competitive, for direct sale as well as for ancillary products. While subsidies may be required in certain cases, particularly for the poorer artisans, the attempt will be to phase these out in time.

1.157 The major areas of growth in the traditional rural industries sector are khadi and handlooms, sericulture, carpet making and other handicrafts, leather and leather products and coir products.

1.158 The targets and outlays for the village and small industries sector are shown below.

Table 1.14: Production Targets for Village and Small Industrie

Sl. No.	Head	Unit	Production 1977-78 (Estimated)	Production 1982-83 (Anticipated)
1.	Handloom industry	m. metres	2300	3700
2.	Powerlooms	m. metres	2900*	3900*
3.	Khadi and Rural Industries	Rs. crores	270	2561
4.	Small scale Industries	Rs. crores	6700**	26700
5.	Industrial estates	Rs. crores		
6.	Handicrafts	Rs. crores	550	800
7.	Sericulture	lakh kgs.	35.4	62.5
8.	Coir industry		N.A.	N.A.

*Includes art-silk fabrics.

**Relates to calendar year 1976.

N.A. Not available.

Table 1.15: Outlays for Village and Small Industries

Sl. No.	Industry	Fifth Plan 1974-78 (Estimated expenditure)	Plan Outlay 1978-83
(0)	(1)	(3)	(4)
1.	Handloom Industry	80.6	280.0
2.	Powerlooms	1.5	6.0
3.	Khadi & Rural Industries	126.4	390.0
4.	Small Scale Industries	121.9	545.0
5.	Industrial Estates	17.6	45.0*
6.	Handicrafts	14.9	57.0
7.	Sericulture	19.2	70.0
8.	Coir Industry	5.6	17.0
	TOTAL	387.7	1410.0

*Includes Rs. 60.0 crores for the schemes of Craftsmen Training and Apprenticeship Training.

Large and Medium Industries

1.159 While a substantial step up in public sector investment is planned, the share of this sector as a whole is expected to fall. In all public sector industries where there is heavy investment in plant and machinery, full provision has been made for rehabilitation and replacement of old equipment so that the existing units work at close to full capacity.

Steel

1.160 The major outlay in the Plan is for on-going schemes, in particular, the expansion of Bhilai and Bokaro. In addition, provision has been made for increasing capacity by technological improvements, setting up slag based cement units, captive power plants and an experimental sponge iron plant. The production of saleable steel is expected to reach 11.8 million tonnes by 1982-83 as compared to an estimated 7.7 million tonnes by 1977-78. A start on a new steel plant is envisaged towards the end of the Plan. Overall production will be somewhat in excess of demand at the end of the Plan.

Iron Ore

1.161 A production level of 65 million tonnes—25 million tonnes for domestic consumption and 40 million tonnes for exports by 1982-83, is envisaged. Practically, all the expenditure is for on-going schemes.

Non-ferrous metals

1.162 Partly as a conservation measure and partly on account of resource constraints, no new mining project other than the exploitation of east coast bauxite deposits for production of alumina is planned in this sector. The provision is mainly for on-going schemes and balancing facilities. The targetted production for 1982-83 and estimated figures for 1977-78 are copper 40,000 & 23,000 tonnes, Zinc 75,000 & 43,000 tonnes and Aluminium 300,000 & 180,000 tonnes respectively.

Engineering Industries

1.163 The rapid growth of the equipment and infrastructure required to sustain the large investments proposed in agriculture, irrigation and power, is expected to lead to a surge in demand for a wide range of engineering goods. This demand will be met largely by improved utilisation of existing capacity. Apart from modernisation of equipment and balancing facilities, equipping Bharat Heavy Electricals to make 500 m.w. sets and a watch component plant at Hindustan Machine Tools, the bulk of the outlay in the public sector is for on-going schemes.

1.164 This sector is expected to make a major contribution to exports. In order to bring down high domestic costs arising from inefficiency or lack of competition, import of capital goods and components will be permitted in selected areas.

1.165. Provision has been made for the expansion of Vizag and Cochin Shipyards. A major growth area is expected to be electronics. Besides being a relatively labour intensive industry, it is capable of absorbing large numbers of scientific manpower and can be set up on a decentralised basis. In the public sector, the main investment is on provision of testing facilities for assisting the small and medium scale entrepreneurs, and manufacture of ferrites and large scale integrated circuits.

Petrochemicals

1.166. The use of petrochemicals in the manufacture of a range of products which meet the requirements of the agriculture, irrigation, and the power sector as also the growing share of the textile industry, is expected to stimulate the demand for these products. Conversion of the semi-finished material into end products is laregly an activity in which the small scale sector can operate and the use of synthetic fibres will now be extended to the cottage sector with the possibility of producing polyester blended khadi. The employment creating potential of the petrochemical sector is, therefore, substantial. An important policy change proposed, is the setting up of plants in which the economies of scale can be realised.

1.167. Besides making adequate provision for on-going schemes in public sector projects at Baroda and Bongaigaon, outlays have been provided for setting up a large olefins complex, a plant for recovery of aromatics such as benzene, xylene and toluene and a polyester plant. The manner in which downstream facilities will be set up is under review. In these as well as in a variety of other petrochemical products, the private sector will have a significant role to play.

Drugs & Pharmaceuticals

1.168. Substantial expansion capacity in the drug industry is envisaged especially in the manufacture of

basis drugs. A major role in this area is expected to be played by the two existing public sector units, Indian Drugs and Pharmaceuticals and Hindustan Antibiotics as well as a third new unit in the eastern sector.

Textiles

(a) *Cotton*

1.169. The additional requirements of cloth in the next 5 years is expected to be 2600 million metres. Of this, the bulk, namely 1400 million metres, is expected to be met by increasing the output in the handloom sector. This limit is imposed by problems of organisation rather than by other considerations. Of the rest, approximately 400 m. metres will be the additional production in the mill sector and 800 m. metres in the powerloom sector. However, no increase in looms in either the mill or powerloom sector will be permitted though modernisation and replacement of old looms will be allowed. In the powerloom sector, special attention will be paid to the needs of the smaller units. If the handloom sector is able to produce more than what has been estimated, suitable cuts will be imposed on the production targets in the other sectors.

1.170 As it meets the requirements of the handloom sector, spinning capacity in the organised sector will be augmented as required and arrangements for distributing yarn to the weavers without relying on middlemen will be made. The major problem of sickness in textile units, one of the contributory factors to which was the compulsory production of controlled cloth at a loss, is being studied and policies which ensure availability of mill made cloth at reasonable prices for mass consumption will be formulated.

1.171. The major public sector outlay proposed is for modernising and renovating the mills taken over by the National Textile Corporation.

(b) *Jute*

1.172 The estimated requirements of jute, booth for the internal and export markets, are expected to reach 14 lakh tonnes in 1982-83. In view of the low level of capacity utilisation owing to lack of demand, the scope for expansion in this industry is limited.

Paper and Newsprint

Paper

1.173. The demand for paper and paperboard is expected to increase significantly, particularly on account of the accelerated programme for adult education and may reach 1.425 million tonnes by 1982-83. Production is expected to reach 1.25 million tonnes and the gap will be met by imports. The public sector outlay is mainly confined to on-going schemes such as the Nowgong and Cachar paper projects. Provision has been made for a start on one new project.

Newsprint

1.174 Against an estimated demand of 2,70,000 tonnes, the production will be about 1,20,000 tonnes by 1982-83. The public sector outlay is largely for on-going schemes.

Raw materials for paper and newsprint

1.175. The planning of raw materials for the paper industry will need to be done on a more rational, systematic and long term basis to conserve the country's limited forest resources. The question of setting up pulp mills to feed small paper plants, increased use of unconventional raw materials including agricultural residues will be examined. Given the limited availability of long fibred timbers, their use for upgrading low grade stock rather than setting up more newsprint plants is being studied.

Cement

1.176. The demand for cement is estimated at 31 million tonnes in 1982-83 against which indigenous production will be 30 million tonnes. The remunerative prices for cement announced recently, the use of slag and improved technologies such as pre-calcination are expected to lead to the rapid growth of cement production in the private and public sector. Provision has been made for setting up slag cement capacity in the public sector. The techno-economic viability of mini-cement plants is being examined.

Sugar

1.177. The domestic requirements of sugar are expected to reach 5.7 million tonnes in 1982-83 and exports of approximately 0.5 million tonnes are anticipated. Since capacity already installed or in construction is 7 million tonnes, no new sugar plants will be put up. A recent study of technological options indicates that future growth in sugar should be through khandsari plants, as these give the largest employment benefits; policies based on this are under study.

Fertilizers

1.178. While the maximum priority will be given to organic manures through programmes for making compost, using bio-gas effluents and bone meal, inputs of fertilizers will be required to support the planned rapid growth of agricultural production. It is expected that starts will have to be made on nine new plants of which six are expected to be in the public sector. Natural gas will be the preferred feed stock. Output of Nitrogen (N_2) and Phosphates (P_2O_5) by 1982-83 is expected to reach 4.1 million tonnes and 1.1 million tonnes respectively as against estimated outputs of 2.06 and 0.66 million tonnes in 1977-78. The demand for nitrogenous and phosphatic fertilizers is expected to reach 5.25 million tonnes and 1.6 million tonnes by 1982-83 necessitating a moderate level of imports.

Pesticides

1.179. A rapid rate of growth in this industry is also expected, both in the public and in the private sector. The public sector investment will be used for taking up the manufacture of new pesticides and setting up joint sector formulation/basic material projects in partnership with the State Governments.

1.180. The outlays under major heads in the Industry and Minerals Sector are set out in the table below :

Table 1.16 : Outlay on Large and Medium Industry

Sl. No.	Head	Fifth Plan 1974-79	Plan 1978-83		Total (3+4)
			Continuing schemes including renewal and replacements and S&T	New Schemes	
(0)	(1)	(2)	(3)	(4)	(5)
					(Rs. in crores)
1.	Steel	1675	1976	515	2491
2.	Fertilizers	1533	518	1131	1649
3.	Non-Ferrous Metals	468	236	191	427
4.	Heavy Engineering	365	256	341	597
5.	Petrochemicals	349	268	213	481
6.	Cement	102	58	129	187
7.	Paper	203	321	45	366
8.	Electronics	46	78	1	79
9.	Drugs & Pharmaceuticals	69	62	45	107
10.	Iron Ore	513	513	15	528
11.	Textiles	104	100	..	100
12.	Others	425	1214	714	1928
	TOTAL	**6852**	**5600**	**3340**	**8940**

*It will be observed that continuing schemes including renewal and replacements account for over 62 per cent of the total outlay in the large and medium industries sector of the Plan.

Transport and Communications

1.181 The main focus of the Plan being on rural development and employment generation, the transport policy aims at correcting the existing imbalances with the objective of facilitating the movement of agricultural inputs and produce, substantial expansion of the rural road net work and strengthening the road transport services. At the same time, the transport system has to meet the requirements of a developing economy for the specific streams of industrial goods and passenger traffic. In making allocations for the development of various modes of transport, the major considerations have been the optimum utilisation of the existing capacities, growth rates of goods and passenger traffic and the need for controlling the concentration of population and growth of industrial and business activity in the metropolitan and larger cities.

1.182 The communications plan will play an important part in the new strategy by increasing its coverage of the rural and semi-urban areas and supporting the developmental programmes.

Roads and Road Transport

1.183 It is proposed to provide all the villages having a population of 1000 and above, with link roads in the next ten years ending 1988. In the Plan 1978—83, a provision of Rs. 800 crores has been made in this regard. Adequate provisions have also been made for removing the deficiencies in the existing National Highway system and construction of strategic roads. Greater attention will be paid to the expansion of road net work in the tribal areas for which a provision of Rs. 295 crores has been made. The total provision for roads in the Plan 1978—83 is Rs. 2183 crores.

1.184 A provision of Rs. 740 crores has been made for augmenting the fleet strength of State Road Transport Services and Delhi Transport Corporation.

Railways

1.185 Originating freight traffic on the Railways is estimated to increase from 240 million tonnes in 1977-78 to around 300—313 million tonnes in 1982-83 ; non-suburban and suburban passenger traffic is likely to grow at an annual rate of three and seven per cent respectively in the Plan period 1978—83. While the programme of gauge conversion and building of new developmental railway lines will be taken up selectively, greater attention will be paid to the programme for track renewals and achieving self-sufficiency in the production of critical items of railway equipment.

Civil Aviation

1.186 The programme for the acquisition of aircraft takes into account the estimated growth of passenger and cargo traffic on domestic and international air routes. On the domestic routes, additional capacity will be created selectively only where rail or road transport cannot render efficient service and speed is of critical importance substantial allocations have been made to expand and improve the supportive, operational and terminal facilities for ensuring optimum capacity utilisation, safety and reliability of air transport services.

Shipping and Ports

1.187 For shipping, the plan is to augment the tonnage from 5.35 million GRT to 7.77 million GRT during the period 1978—83, for which a provision of Rs. 625 crores has been made in the Plan. The share of Indian vessels in the overseas trade would continue to be around forty-two per cent, as at present. The programme aims at the optimum utilisation of the existing capacity at the shipyards.

1.188 During 1978—83, all the on-going projects at the major ports would be completed and the country would have the capacity required for handling all anticipated overseas and coastal cargo traffic. Provision has been made for a new start at Nhava-Sheva.

Post and Telecommunications

1.189 With the object of expanding postal facilities in the rural areas, it is proposed to cover all the villages for daily collection of mail through letter boxes in the next ten years ending 1988, the daily delivery system having already covered almost all the villages. Provision has been made for extending the daily collection facility to two lakh villages in the plan 1978—83;

the remaining two lakh villages are to be covered in the period 1983—88. Fifteen thousand public call offices and an equal number of telegraph offices would be established in the rural areas in 1978—83.

1.190. The total outlay for communications is Rs. 2095 crores, which provides for 11.5 lakh direct exchange lines and setting up a new switching factory with a capacity of two lakh lines. The outlay provides for the existing backlog of telephones to be eliminated and the service to be improved, but it is proposed to give preference to provision of telephones in small and satellite towns to assist the policy of decongesting urban areas including the metropolitan cities. Provision has been made for earth stations to link up with proposed Indian National Satellite (INSAT).

1.191. The information and broadcasting plan has been formulated on the basis of an integrated approach to communications policy. Higher priority has been given to such programmes as would assist rural development. Allocations have been made for district level radio transmitters and for generating software for educational and developmental programmes. Similarly, oultays have been provided for setting up decentralised film production centres for making films as a support to extension activities. In the information services area, the emphasis is on the field publicity work at the village and district level.

1.192. The programme of Meteorology envisages continuance of the country's participation in an international programme, Monex 79, to get closer insights into the behaviours of the monsoon. The provision of meteorological facilities on the Indian National Satellite INSAT-I will enable the acquisition of valuable data on wind and temperature conditions which affect the weather and improve the weather prediction capabilities. Another major area of emphasis during the Plan will be hydro-meteorology linked to plans for the development of water resources.

1.193. The outlays for the various sub-sectors are summarised below —

Table 1.17: Outlays for Transport and Communications

(Rs. crores)

Sl. No.	Head	Fifth Plan 1974-79	Plan 1978-83
1.	Railways	2202	3350aa
2.	Roads	1354	2183
3.	Road Transport	461	740*
4.	Ports		
	(*i*) Major ports.	521	390
	(*ii*) Minor ports.	50	72
	(*iii*) Light houses	14	16
5.	Inland Water Transport	32	43
6.	Shipping.	450a	637
7.	Communications	1267	2095
8.	Civil Aviation	297	700
9.	Tourism	75	109
10.	Meteorology	40	107
11.	Information & Broadcasting	122	183
	SUB-TOTAL	**6835**	**10625**
12.	Farakka Barrage	32	..
	TOTAL	**6917**	**10625**

Includes Rs. 80 crores for contribution to State Road Transport Corporation.

*Includes Rs. 372 crores of internal resources.

*Excludes provision under SAFAUNS.

Social Services

Education

1.194. The priorities in the next Plan will be the removal of illiteracy, universalisation of elementary education and making education more employment-oriented and relevant to society. A nationwide programme of adult education is to be launched with emphasis on illiterates in the age group 15—35. Of the adult illiterates estimated to be about 100 million today, 65 million will become literate by the end of the Plan and the remaining 35 million by 1983-84. In this task, the Universities and other institutions, trade unions, employers and voluntary bodies will be actively associated.

1.195. The enrolment in elementary education is expected to increase by 320 lakhs covering 90 per cent of the children in the age group 6 to 14 as compared to 69 per cent today. Particular attention will be given to the education of girls and of children from the poorer sections. The aim of educational and social policy must be to reduce the rate of drop-outs at both the primary and middle stage. Funds are being provided for large-scale institution of schemes of non-formal education at these levels, which may prove to be more capable of retaining children and training them. Expansion of general academic courses in secondary and university education will be kept down and emphasis shifted to vocationalisation and quality improvement. The aim will be to introduce a rural bias, inculcate a scientific attitude and improve the cultural content of the curricular programmes.

Health

1.196. The main objective will be to provide better health care and medical services to the rural areas and the urban poor. For every 1000 of the population, a community health worker and a trained dai will be provided as soon as possible. In addition to completing adequately the backlog of construction of primary health centres and sub-centres, the target of one PHC per block will be achieved. In addition, 38,000 new sub-centres will be set up to intensify the coverage of the rural population from one for every 10,000 persons to one for every 5000 persons by 1988. In addition, 400 primary health centres will be upgraded into 30 bedded hospitals.

1.197. No linear expansion of curative services in urban areas based on specialities and super-specialities will be permitted except in a few cases where the need for such expansion is established on the grounds of gross inadequacy. Urban areas would be expected to meet a part of the cost of this programme through local cess and revenues. Establishment of new hospitals, additions to the existing hospitals and the number of aditional beds would be so planned as to ensure balanced regional distribution, viability and sound management. Hospitals will generally form the apex of a three tier system servicing the smaller hospitals and primary health centres and sub-centres.

1.198. Programmes for control/eradication of communicable diseases, especially of malaria, whose reappearance gives cause for anxiety will be given special attention.

1.199. To ensure quality of medical education, further expansion of under-graduate medical education including increased admissions to existing colleges will not be supported. Research programmes would be directed towards problems of immediate relevance to the country. Indian systems of medicine will be further encouraged. Health education measures would form an integral part of health schemes as well as elementary and adult education.

Family Welfare

1.200. The Family Welfare programme will continue to be accorded very high priority in this Plan. The strategy will be to increasingly integrate the health, family welfare, maternity and child health and nutrition services at all levels. Attempts would also be made to secure general integration of the family welfare programme with other welfare programmes. The directions contained in the Statement of Policy on the Family Welfare Programme (June, 1977) will guide the promotion of different methods of family planning. The emphasis will be on inducing wider acceptance of the small family norm through persuasion and education. Voluntary organisations will have an increasing role and opinion leaders will be actively associated for motivating couples in the reproductive age group to accept the small family norm. Official support will be directed to the provision of adequate services and supplies, follow-up and after-care services nearer the homes of the people. States with weak infrastructure and having high birth and high infant/maternal mortality rates wil receive special attention. Maternity and child health schemes will be enlarged and intensified. Research on development of simpler effective and better methods of contraception, will be promoted, including methods suggested by the indigenous systems.

Urban Development, Housing and Water Supply

1.201. The thrust of the new policy on urbanisation is to slow down and, if possible, to reverse the rate of growth of the metropolitan cities. At the same time, the small and medium towns, which can serve as growth centres for providing services to the programmes of integrated rural development will be assisted to improve their civic services such as sanitation and water supply. Infrastructural facilities such as power supply, telecommunications and transport system will be preferentially given to these towns. Government assisted housing programmes will also give priority to these areas.

1.202. The strategy of attempting a massive re-location of slums will be discouraged and instead, increased investments would be made in slum improvement. In the larger cities, funds provided for programmes of slum improvement would benefit 13 million slum dwellers.

1.203. In the field of housing, the highest priority is being given to the provision of house-site and building assistance for rural landless workers. About 8 million such workers may be benefited. Other public housing schemes are being given higher outlays and will be re-structured to make them consistent with the real needs and the paying capacity of low income groups for whom they are intended. The development of housing generally is through investment by the private sector. Emphasis is therefore being laid on the provision of institutional suuport to low cost private housing. A substantial provision has also been made for Housing and Urban Development Corporation (HUDCO), to finance public low cost housing.

1.204. As regards water supply, the main thrust in the Plan would be towards providing sources of water supply to all problem and difficult villages numbering a lakh. Adequate provision has also been made to meet the requirements of water supply and sanitation programmes in the medium and small towns, and for completing the committed and on-going schemes in the larger cities.

Social Welfare and Nutrition

1.205. Emphasis would be given to the extension of the special nutrition schemes in tribal area. Funds would also be provided to voluntary agencies to expand services to children in need of care and rehabilitation integrated child development services and other related programmes. Mid-day meals for children will cover 4 million additional undernourished children while the supplementary nutrition programme will be preferentially extended to blocks which have a high population of scheduled castes and tribes. The experimental schemes of functional litracy and condensed courses of education for women will be expanded and linked with vocational courses for providing greater employment opportunities.

Backward Classes

1.206. Scheduled Castes and Tribes form a major part of the disadvantaged section of the community. With scheduled castes, the problem lies not merely in their poverty and lack of assets but in he social taboos that restrict their social mobility. Both groups have been exploited for long and any plan that seeks to attain growth with justice must include specific provisions to promote the well being of these groups.

1.207. The tribal population lives mostly in compact geographical areas most of which will be covered by tribal sub-plans aimed at reducing the gap between these areas and the rest of the country. Scheduled castes are dispersed throughout the country. Their needs will be taken into account by giving priority to blocks with a high concentration of scheduled castes in the programme for integrated rural development and through specific schemes for agriculture, rural credit and subsidiary occupations. Backward classes have a lower rate of literacy and school enrolment than the rest of the population and hence will be the major beneficiaries of the drive towards universal elementary education and adult literacy that form part of the Revised Minimum Needs Programme. This programme also has other components which would favour backward classes. Thus, the provision of house sites for the landless would be mostly for the benefit of backward classes since they form the bulk of the rural landless population. Priority for backward classes is also built into the programmes for supplementary nutrition and the environmental improvement of slums. Apart from the benefits that would accrue to backward classes from the orientation of general development programmes, the Plan includes a substantial provision for welfare schemes for such classes. These include

scholarships, training centres and grants and subsidies for productive activities.

Labour Welfare and Craftsmen Training

1.208. In order to promote industrial harmony, it is proposed to replace the existing legal arrangements by a comprehensive law on industrial relations. Schemes for participation of workers in decision-making and management at different levels are being worked out. To minimise disparities in wages and incomes between and within workers in different sectors, a wages, incomes and prices policy will be formulated.

1.209. Minimum wage legislation will be extended to all workers where its enforcement is practicable including the rural areas e.g. plantation workers. However, for improving the income levels of the bulk of the rural workers, greater emphasis will be placed on organisations of rural workers who will ensure that they derive benefits from the various schemes and programmes of which they are the targets. Likewise the demand for labour arising out of the massive investments in agriculture and allied activities and rural industries and public works is itself expected to raise agricultural wages in due course. A Centrally-sponsored scheme for attacking the problem of bonded labour has recently been formulated. Special attention will be paid to improving the employment opportunities for women and removing discrimination against them in the matter of wages. Similarly, a multi-pronged approach to the problem of child labour will be followed—increasing the family income of the adults by employment, adult literacy and improved educational facilities.

1.210. Government organisations responsible for ensuring safe and humane working conditions will be strengthened as well as institutions involved in research and training on workers' problems and in promoting organisation of rural workers.

1.211. The sub-sectoral outlays in the Social Services sectors are as follows :—

Table 1.18: Outlays for Social Services

(Rs. crores)

Sl. No.	Sector	Fifth Plan 1974-79	Plan 1978-83
(0)	(1)	(2)	(3)
	Social Services		
1.	Education	1285	1955
2.	Health and Family welfare . .	1179	2095
	Works	1189	250
3.	Housing, urban Development and works	1189	2540
4.	Water Suply	971	1580
5.	Social Welfare and Nutrition . .	202	305
6.	Backward Classes and Harijan Welfare	327	545
7.	Others (Rehabilitation, Labour Welfare etc.) including unclassified) .	1071*	335
	TOTAL	**6224**	**9355**

*The outlays in this sector have been reclawsified inthe 1978-83 Plan and included under the outyas in the other sectors.

Science and Technology

1.212. One of the important tools which will need to be oriented towards the implementation of the Plan is the country's large reservoir of scientific and technological talent and the net work of scientific research institutions that has been built up. In formulating the S&T Plan, special priority has been given to these programmes which support the plan priorities. Substantial changes in the attitudes and value system of the scientific community and a much greater appreciation of their ability to contribute to the achievement of Plan targets on the part of the rest of the community will be required. The two primary aims of science and technology in the Plan will be (a) to focus on meeting the needs of rural development and (b) to move towards greater technological self-reliance.

1.213. The linkage between the scientific agencies and institutions and different departments of the Government has to be further developed to enable the absorption of the expertise developed and commercial exploitation of research results. It is envisaged that the R&D base would be extended to fully cover the needs of agriculture, forestry, irrigation, meteorology, health, energy, communications, transport, mining and industry. The industrial research and technological development capability would be specifically oriented to establishing links between the industry and the laboratory and implementing programmes of regional interest, including those specific to the needs of the village and small scale industries.

Atomic Energy

1.214. The direction of investments in the field of atomic energy has been determined by the need to utilise this technology not only for long-term development of cheap nuclear power, but also for other areas of social and economic priorities such as industries, agriculture, medicine, sewage treatment etc. Efforts to set up a comparatively large size (100 MW) Experimental Research Reactor completely indigenously, development of a Fast Breeder Reactor, Variable Energy Cyclotron, and development of Medicine linked to cancer research are some of the significant programmes in this area.

Space

1.215. The two primary objectives of the investments on space science and technology are to build up the necessary technological capability for building satellite and launching capability and utilising such space systems for development needs in the areas of communication, meteorology and survey of natural resources. A multipurpose operational geo-stationary satellite system called INSAT-I is being designed, to be fabricated and launched abroad under a contractual arrangement. INSAT-I, which is expected to be launched in early 1981, will provide service for telecommunications, and meteorology. The meteorological capability will cover continuous observation of weather systems and data collection inclusive of relays from remote and unattended areas and disaster situations. The plans of the Department of Space provide for development of indigenous remote-sensing and communication satellites, and launching facilities for the former.

1.216. The sectoral outlays for the Science & Technology plan are given below :

Table 1.19: Outlays for Science and Technoloy

(Rs. crores)

Sl. No	Head	Fifth Plan 1974-79	Plan 1978-83
(0)	(1)	(2)	(3)
A. S&T Agencies			
1.	Atomic Energy	167.13	220.00
2.	Space	128.27	210.00
3.	Deptt. of Science & Technology	58.96	110.00
4.	CSIR	81.77	110.00
		436.13	**650.00**
B. S&T Component under Sectors			
1.	Agriculture (including irrigation)	169.94	365.00
2.	Energy	22.54	60.63
3.	Industry & Minerals	81.61	194.09
4.	Transport & Communications	46.10	104.65
5.	Social Services	57.50	112.00
		377.69	**836.37**
	TOTAL	**813.82**	**1486.37**

Environment

1.217. Denudation or over-exploitation of forests leading to erosion, silting of reservoirs and water channels and adversely affecting the ecological balance, urban slums, pollution of rivers, lakes, sea and the air, salination and desertification of the land are some of the problems which have already assumed serious dimensions. It is important therefore that further damage to the environment should be stopped and to the extent possible repaired.

1.218. Besides giving greater emphasis to schemes of afforestation, decongestion of large metropolitan complexes, reclamation of lands affected by salination and halting the spread of deserts, the Plan will also ensure that projects and programmes which are likely to cause unacceptable environmental damage are not taken up.

1.219. There is no insoluble conflict between economic development and environmental protection provided the awareness of the dangers of environmental damage are borne in mind by the planners when formulating projects. For this purpose, the National Council on Environmental Planning and Coordination (NCEPC) is issuing guidelines for formulating projects in different sectors which focus on this problem.

1.220. Apart from legislative measures dealing with the control of water and air pollution, the NCEPC and its counterpart agencies like expert committees in the different States will be strengthened. It is also proposed to give them greater powers to ensure that no project which is likely to do environmental damage is approved without the matter being given due consideration at all levels. Greater public awareness of the dangers that lie ahead will be created.

Planning and implementation

1.221. In the evolution of planning in India the two new directions of development will be :

(a) the preparation of comprehensive area development plans at the block level; and

(b) the adoption of the rolling plan system.

The existing planning machinery, however, also needs to be strengthened at all levels.

1.222. At the Centre expert committees are being established to report on (a) demographic policies and their implementation (b) energy policy; and (c) comprehensive transpoort planning. Most policy; and (c) comprehensive transport planning. Most of the hundred or so Working Groups set up to consider sectoral policies and programmes have yet to give their final reports; their recommendations would be taken into account in considering any improvements that may be needed in the Central planning system. The arrangements in the Central Ministries and the Planning Commission for detailed project planning, investment appraisal and monitoring of projects and programmes are being reviewed to identify the areas where improvement is needed. The machinery for ensuring coordination between financial institutions and Government needs to be strengthened to ensure the preferential flow of funds strictly according to Plan priorities. It is also necessary to ensure that the appraisal methods of financial institutions relating to major investments in the private sector are based on criteria similar to those applied in evaluating projects in the public sector of the Plan.

1.223. Although decentralisation of the planning process has for long been a declared aim, its application has been uneven. Independent planning capability has not yet been developed in all States, and district level planning has been introduced in only two or three States. The existence of a national plan does not obviate the need to prepare integrated development plans at the State levels. State planning machinery in many States has to be strengthened to prepare properly articulated sectoral programmes as parts of a coherent overall plan. The principal aims of the new Plan are increased agricultural productivity, more rapid growth of agriculture-related activities, rural industrialisation and the provision of basic support services throughout the countryside. These require that decision making should be divided in an appropriate hierarchy between the State, District and Block levels. While model planning structure at these levels would be suggested by the Planning Commission, it will be for every State to adopt them to its own requirements.

1.224. At the State level, the existing capacity for project preparation will need to be strengthened considerably. Procedures for the economic appraisal of major investments have to be improved including the adoption of modern methods in this field. An effective monitoring system has to be established for all important programmes. The organisations entrusted

with the evaluation of the results of the development schemes will need to be expanded to undertake more concurrent evaluation of rural development programmes.

1.225. The special features of area development plans for full employment planning at the block level have been outlined earlier in this Chapter. Guidelines for the preparation of these plans are being prepared by an expert committee and will soon be ready. Another expert group is examining the scope for block level planning by voluntary agencies.

Rolling Plan

1.226. The overall investment plan, the public sector outlay and capacity and production targets for major sectors have been worked out for the five year period 1978-83. For some sectors the expected growth for the next five year period upto 1977-78 have been indicated. But it has not been possible, due to constraint of time, to indicate in this document the outlays and output targets year by year for the years 1978-83. This exercise will be completed shortly. Meanwhile programmes and projects under different sectors will also be formulated in detail, wherever this has not yet been done, in consultation with the Central Ministries and State Governments. The executing agencies will then be expected to prepare their schedules of implementation for achieving the annual targets. Before the end of this year the projections for more important sectors will be indicated for an additional year beyond the present Plan period i.e. upto 1983-84. The extension of the Plan horizon in this way is essential for the phasing of investment decisions in sectors such as irrigation and power. While preparing the Annual Plan for 1979-80, the progress of major sectors during 1978-79 will be reviewed. If there are slippages in any area, additional effort would be indicated for achieving the 1982-83 target. If however, the demand outlook in any sector has changed significantly since the preparation of the Plan, or if in the light of better information some earlier forecasts need to be modified, the necessary limited adjustments will be carried out. This, in brief, constitutes the methodology of the Rolling Plan, which is explained in more detail in Chapter 7 of Volume II.

Administrative Ministry

1.227. With the change of priorities and the reallocation of investments in sectors primarily within the sphere of State responsibility, the burden of plan implementation on the State Governments will be greatly increased. The State administrations at all levels will need to be revitalised. The most radical restructuring may be needed in the fields of agriculture and rural development administration. The personnel of all categories dealing with development projects in the State have to be persuaded to a system of values where service in rural areas and work with rural agencies is regarded as more important than other fields of work which in the past have carried greater prestige. A revised structure of rewards, by way of recognition and preferment, would be helpful in achieving this.

1.228. The extent to which the implementation of these crucial parts of the Plan should be undertaken by locally elected bodies, from the District down to the village level, will be considered when the report of the Ashoka Mehta Committee on Panchayat Raj Bodies has been received. The participation of voluntary bodies other than elected bodies in the preparation and implementation of local development plans would also need to be encouraged. It would, however, be for the States to work out how best these agencies can contribute towards the achievement of the objectives of the Plan.

Maintenance of Assets

1.229. An area to which the Commission would like to draw special attention is the need throughout the economy to maintain and utilise to best advantage the physical assets created in earlier Plan periods. Expansion of output, whether in agriculture or industry, depends critically on maintenance of productive capacity, and this should not be allowed to suffer. Especially under conditions of financial stringency, the States and Central agencies tend to restrict the outlay on necessary maintenance as a result roads and canals are allowed to fall into dis-repair, buildings deteriorate, power plants suffer break-downs and factories produce below capacity. So far as the State sector is concerned, it is hoped that the Seventh Finance Commission will consider ways and means of ensuring that the allocation made for the maintenance of physical assets in determining the devolution of resources, are properly applied to this purpose. This will also be reviewed from time to time by the Planning Commission while discussing the Annual Plans of States. So far as Plan outlays are concerned, in all sectors funds are being provided for ensuring the improvements and optimum utilisation of assets already created. To give some examples, in the irrigation sector there will be major schemes for modernising the older storage and distribution systems to improve their coverage. Tubewells which are idle for lack of power will be energised as a matter of priority. Rural roads taken up under the crash programmes for employment or scarcity relief schemes, and left incomplete, will be completed wherever they are really useful. Provision is being made for training of operatives for better maintenance of Power stations and transmission systems. Funds are being provided for preventive maintenance in the steel, fertilisers, and other industries. Allocations have also been made for modernisation and replacement of equipment for all enterprises in the public sector.

Participation

1.230. The Plan, whose primary emphasis is on rural development and rural services, will demand a much greater level of organisation and public participation than past plans. It is relatively a simple matter to prepare projects for setting up industries or power stations or expanding capacities of ports or airlines or tele-communications systems. A limited number of experts, planners, construction workers, managers and operatives are needed to implement such schemes. A programme of rural development involves investment decisions by hundreds of thousands of individuals and the ability to evoke the response of millions of poten-

tial beneficiaries. Officials at all levels can only play a limited role in such an enterprise as effecting the deliveries of certain essential inputs. The efficient management of this country-wide network will, in the first instance, impose tremendous responsibilities on the Government machinery. But in the final analysis the Plan can only succeed if there is full participation of all the groups who will be affected in one way or another by the massive new rural investment programmes.

1.231. Besides the rural poor, the other group whose effective participation has to be sought in implementing a radical plan of rural development is the youth of the country. While on the one hand the lack of employment opportunities results in constant pressure for jobs, on the other hand no sustained effort has been made to harness their talent and energy in programmes of national construction. Young people everywhere ask what they can do but we have not been able to provide an answer. The National Service Scheme and the National Cadet Corps., could be augmented and reoriented to develop the kind of momentum that is needed. The time has come to organise, through these and other agencies, a programme for the involvement of youth on a mass scale for rural development. The scope for such enterprise is wide ranging from schemes of adult literacy and non-formal elementary education to rural sanitation and drives for immunisation and family planning. Rural youth with some degree of technical skill can be organised into groups to implement specific projects in demarcated areas for the development of agriculture, animal husbandry or rural industry. Similar projects could also be developed for urban slum improvement. The possibility of making a year's national service on rural development and similar projects compulsory for students, which has been mooted in the past, might be re-examined.

1.232. There are four elements needed for the success of any radical plan for restructuring rural life. First there must be a national consensus on the Plan itself. Over the years such a consensus has prevailed in respect of every national plan. The strategy set out here is the appropriate one for the next phase of the country's development. The Planning Commission is confident that the objectives, priorities and policies laid down in this document will find general acceptance with the Central and State Governments, all political parties and all sections of informed opinion in the country.

1.233. Secondly, the Plan demands determination of Government as a whole to raise and deploy all necessary resources and to devote all their energies to the fulfilment of its objectives.

1.234. Thirdly, it requires of the community the readiness to accept a degree of restraint on the expansion of its current levels of consumption for the sake of the future.

1.235. Lastly, and most vitally, the Plan must evoke the enthusiasm and participation of the vast numbers of citizens whom it will affect, more particularly the target groups to whom the benefits of the rural employment strategy have to be carried. The poor and the dis-possessed will not come into their own only by plans and programmes, however well-conceived, by declarations of intent or by exhortations to thrift and labour. If the Plan is to to succeed, they have to be helped to organise themselves to claim as a right the benefits that should flow to them, so that in turn they may make due contribution to society.

1.236. The goals are attainable, given only the national will to pursue them without faltering.

PART II

Chapter 2

The Five Year Production Plan in Perspective

In the next stage of the evolution of the Indian economy, planning must be geared to attack the unsolved problems of poverty, unemployment, inequality and structural backwardness more directly and effectively. As a result of development so far, the saving capability of the economy has increased. An adequate stock of technological skills is available. A strong and diversified industrial and infrastructure base has been built up. And in parts of the country, agriculture is also highly advanced. The task now is to utilise these human, material and financial resources for a new pattern of growth in furtherance of the goals of full employment and distributive justice. This Chapter outlines the main features of the proposed production strategy and presents the rationale of targets for important sectors in some detail.

2.2 The targets for the next five years are related to projected longer-term requirements (for 1987-88) in key sectors.

I

The Choice of the Growth Rates

2.3 The determination of a growth rate target for the next five years should be based on a careful analysis of recent growth experience. It is well known that over a long period, national income has grown only at an average rate of 3.5 per cent a year. During the 16 years 1961-62/1976-77, the GDP increased at a lower rate of 3.3 per cent a year. Even within this 16-year period, the growth rate decelerated in the latter eight years. This tendency has particular affected the secondary and tertiary sectors (Table 2.1).

Table 2.1 : Growth Rates in Gross Domestic Product (At 1970-71 Prices)

(Per cent per Annum)

Sl. No.	Sector	1961-62 to 1976-77	1961-62 to 1968-69	1969-70 to 1976-77
(0)	(1)	(2)	(3)	(4)
1.	Agricutlture	2.10	0.70	1.28
2.	Forestry & Logging	4.50	5.00	6.47
3.	Fishing	4.12	4.40	4.34
4.	Mining & Quarrying	4.03	5.20	4.74
	Sub-total : Primary	**2.24**	**0.99**	**1.54**
5.	Maufacturing	4.12	3.95	3.60
	5.1 Registered	4.41	4.38	3.28
	5.2 Unregistered	3.62	3.26	4.20
6.	Construction	4.14	7.79	1.89
7.	Electricity, gas & water supply	8.52	11.72	5.20
	Sub-total : Secondary	**4.30**	**5.16**	**3.27**
8.	Transport, Storage & Communications	4.98	5.27	5.17
	8.1 Railways	3.25	4.15	3.07
	8.2 Transport by other means & Storage	6.02	5.85	6.25
	8.3 Communications	5.88	7.14	5.70
9.	Trade, hotels & restaurants	3.78	4.16	3.32
	Sub-Total : Trans. Commun. & Storage	**4.18**	**4.55**	**3.92**
10.	Banking & Insurance	6.25	4.28	6.51
11.	Real estate, ownership of dwelling and business services	2.10	2.13	2.58
	Sub-total : Finance & real estate	**3.29**	**2.66**	**3.87**
12.	Public Administration & defence	7.11	7.40	6.93
13.	Other Services	3.18	3.89	2.78
	Sub-total : Community & Pers. Services.	**5.00**	**5.35**	**4.86**
	Total G.D.P.	**3.34**	**3.02**	**2.77**
	Per-Capita G.D.P.	**1.12**	0.79	0.62

Source:—C.S.O. estimates, Data at 1960-61 Prices adjusted.

2.4 The achieved growth rates are modest considering that a large number of other developing countries have been recording real rates of growth of the order of 5 to 8 per cent. But a realised rate of growth of 3.5 per cent over a long period is still very significant for a subcontinental country under extreme demographic pressure. This pressure has allowed only a small average annual increase in real per capita income of the order of 1 to 1.5 per cent.

2.5 The growth rate which the country can aim at in the near future should be close to what the economy can really achieve. In the Fourth Plan and the Draft Fifth Plan, a 5.5 per cent growth rate was postulated, but in the periods of these Plans the actual rate of growth remained stuck at 3 to 3.5 per cent. Therefore, it is no longer possible to proceed on the theory that planning on the basis of a high growth rate will tend to produce a high growth rate in practice. The planning of investment substantially above the real saving and producing capacities of the economy only leads to excessive deficit financing and/or a lowering of targets in mid-term appraisals. The original growth targets had to be revised downwards both in the Fourth and the Fifth Plans. In the Fifth Plan even the overall growth rate target was scaled down from 5.5 to 4.37 per cent in the final document.

2.6 One of the reasons for these shortfalls was that the saving rates and the capital output ratios assumed proved to be unrealistic. In the present plan for 1978—83 the net saving rate is assumed to increase by about 4 percentage points from 16.5 to 20.5 per cent. This increase is considered achieveable because in recent plans 3 percentage point increases in the saving rate have already been recorded. In the case of the household sector alone the saving rate (as a proportion of household disposable income) is not expected to increase (See the Chapter on Financial Resources).

2.7 The actual capital-output ratio in the Indian economy (exceeding 4 over the period 1960-61/1975-76) has also been higher than the ratio assumed in previous plans (about 3 in the Fifth Plan) partly because of inefficiency, but mainly because the capital costs of agricultural development were under-estimated. In a period when irrigation investments are undertaken and infrastructure is extended to the rural areas on a large scale, the incremental capital-output ratio can be quite high. In the coming years the big irrigation and power programmes are likely to raise the ratio significantly. And in large-scale industries where capacity is to be expanded, such as cement and fertilizers, project costs have increased manifold in recent years. Thus if assumptions about saving and capital-output ratios are to be realistic, the average growth rate in the next five years is expected to be 4.7 per cent.

2.8 This rate (4.7 per cent), therefore, has been accepted as the target growth rate for the next five years. Sectoral projections have been made on this assumption. It is true that the foreign exchange constraint will not be binding in the near future. It is also true that the planned growth of irrigation capacity will begin to remove a major bottleneck preventing higher agricultural growth. At the same time, accelerated rural development and small industries programmes will redistribute purchasing power and relax the demand constraint on industrial growth. But the full benefit of these programmes will accrue in the form of additional output only after a time-lag of at least two to three years.

2.9 Therefore, an average annual rate of growth of 4.7 per cent over the next five years is likely to be the resultant of a somewhat lower average rate in the first half of the period and a much higher rate, perhaps 5 to 5.5 per cent, in the latter half. If a higher growth rate appears feasible earlier a revision would be considered.

2.10 A 4.7 per cent rate of growth will certainly be lower by about one precentage point than the rates proposed, but never achieved, in recent plans. But it will be more than one percentage point higher than the growth rate actually achieved in recent plans as well as over the whole planning era.

2.11 In order to prevent excessive inflation and to stay close to what the economy can accomplish, and above all, to restore the credibility of the planning process, only a moderate increase above the recently achieved rate seems appropriate at present. In the light of actual experience the rate can be raised later. However, in projecting demands for 1987-88 in key sectors the growth rate assumed for the period 1982-83|1987-88 is higher at 5.5 per cent.

II

The Basis of Production Planning

2.12 Full consideration has been given to the new priorities in fixing the pattern of production targets. In particular, the following features characterise the pattern.

2.13 First, the planned expansion of effective irrigation capacity (15 million hectares) is reflected in the projected growth of the cropped area, the intensity of cropping, the distribution of area between different crops, and the crop production targets.

2.14 All inputs needed by agriculture from the industrial sector, such as fertilizers, pesticides, pumps, cement, etc. are fully provided for in fixing industrial targets.

2.15 Also, the requirements of a larger rural development effort and the Revised Minimum Needs Programme in the form of construction inputs, paper, medicines, inputs for water supply systems, etc. have been included in production targets.

2.16 Secondly, the requirements of power capacity to overcome present shortages and meet future demands, are reflected in the power targets; and inputs needed by the power sector itself have been taken into account in fixing targets for industrial sectors which supply these inputs.

2.17 Thirdly, it is assumed that in consumer goods industries, small industry sub-sectors will get reasonably increasing shares of output growth. High targets are fixed for decentralised sectors which enter the input-output table directly, e.g., handloom textiles and gur and khandsari.

2.18 Fourthly, in industries suffering from demand recession or excess capacity, new capacity expansion is postponed, though some new starts are provided in

anticipation of additional capacity demands beyond 1983.

2.19 Fifthly, higher levels of imports are assumed for some sectors and domestic production targets are consequently adjusted. This operation is dictated both by the need to utilise foreign exchange reserves and to give greater consideration to the relative cost of domestic and imported supplies.

2.20 And, finally, conservation considerations have influenced targets in some sectors such as coal, petroleum and non-ferrous metals.

2.21 Consumption estimates fed into the basic 89 sector input-output model are derived from a mixed demand model computed separately for rural and urban areas*. The growth rate of per capita private consumption expenditure assumed for demand projections is 2.21 per cent per annum in the next five years and 3.18 per cent for the five years ending March 1988. These rates are consistent with the GDP growth rates assumed for the two-periods (4.7 per cent and 5.5 per cent respectively).

2.22 Demand estimates have been made separately for the poor and non-poor sections of the population. After trying several variants combining the consumption of the poor and the non-poor in different proportions, one variant was accepted : in this, the consumption of households below the poverty line is increased in five years to 75 per cent of the consumption required to cross the poverty line. In other words, three-fourths of the deficiency of consumption in the poor households is assumed to be eliminated by 1982-83. Since total consumption is determined by the macro-economic exercise, the aggregate consumption of the non-poor is correspondingly reduced. These assumptions are critical. For they result in a higher weight being given to the needs of the poor population. And they ensure that the production/import targets for essential consumption goods definitely include the additional demand that may be created by the redistribution of purchasing power as a result of rural development, area planning, minimum needs and small industry programmes.

2.23 The demand for foodgrains with the redistributive assumption turned out to be 4 million tonnes higher than without redistribution. This extra demand, as well as other extra demands are covered by the targets proposed.

2.24 Irrigation, power and minimum needs programmes have raised the share of construction in gross fixed investment from nearly 64 per cent in the current year to 69 per cent in 1982-83.

2.25 Assumptions about exports, imports and net inflow from abroad are detailed in the Chapter on Financial Resources.

2.26 A summary picture of growth rates in aggregated sectors in the next 5 years and the 5 years ending 1987-88 is given in Table 2.2.

It will be seen that in the next 5 years, while the gross domestic product grows 4.7 per cent, the gross agricultural output should grow 3.98 per cent, mining and manufacturing output 6.9 per cent, electricity generation 10.8 per cent, construction output 10.6 per cent and transport and services about 6 per cent per annum. In the perspective period 1982-83|1987-88, although GDP growth rate is assumed to be higher (5.5 per cent) some of the sectoral growth rates would decelerate.

Table 2.2 : Projected Sectoral Rate of Growth in Terms of Gross Value of Output and Gross Value Added at Factor Cost

Sl. No.	Sectors	Growth Rate (Per cent)			
		Output		Value Added	
		1982-83	1987-88	1982-83	1987-88
		1977-78	1982-83	1977-78	1982-83
(0)	(1)	(2)	(3)	(4)	(5)
1.	Agriculture	3.98	4.02	2.76	3.92
2.	Mining and Manufacturing	6.92	6.37	5.03	6.80
	(*a*) Mining	8.84	5.16	9.07	5.42
	(*b*) Manufacturing	6.85	6.68	4.67	6.23
	(*i*) Food products	3.64	5.45	1.39	4.93
	(*ii*) Textiles	4.72	4.60	3.47	6.04
	(*iii*) Wood and Paper Products	9.58	6.79	8.39	6.55
	(*iv*) Leather and Rubber Products	6.61	9.16	3.29	9.06
	(*v*) Chemical Products	9.46	4.50	6.78	4.19
	(*vi*) Coal and Petroleum Products	8.15	5.43	6.66	5.26
	(*vii*) Non-Metallic mineral products	11.27	6.08	9.99	5.83
	(*viii*) Basic Metals	8.71	6.75	1.43	6.09
	(*ix*) Metal Products	7.31	8.72	2.57	8.46
	(*x*) Non-electrical Engineering Products	6.45	8.21	5.96	8.28
	(*xi*) Electrical Engineering Products	5.82	9.41	3.59	9.17
	(*xii*) Transport Equipment	5.30	10.51	3.71	10.19
	(*xiii*) Miscellaneous Industries	7.38	10.17	6.28	10.31
3.	Electricity	10.80	9.68	9.55	5.74
4.	Construction	10.55	6.60	10.09	6.54
5.	Transport	6.24	6.74	4.65	6.53
6.	Services	6.01	6.23	5.61	6.22
7.	Total			4.7	5.5

*The Model used will be published in the technical papers. The mixed demand model involves the estimation of a linear expenditure system for 13 commodity groups, and Engel or better fitting functions for sectors within each group.

Table 2.3 : Sectoral Composition of Gross Value Added in 1977-78, 1982-83 and 1987-88

Sl. No.	Sectors	Share in Value Added (Per cent)		
		1977-78	1982-83	1987-88
(0)	(1)	(2)	(3)	(4)
1.	Agriculture	42.50	38.71	35.89
2.	Mining and Manufacturing	18.47	18.76	19.95
	(*a*) Mining	1.37	1.68	1.68
	(*b*) Manufacturing	17.10	17.08	18.27
	(*i*) Food Products	1.86	1.51	1.48
	(*ii*) Textiles	3.21	3.02	3.11
	(*iii*) Wood and Paper Products	1.00	1.19	1.27
	(*iv*) Leather and Rubber Products	0.52	0.48	0.57
	(*v*) Chemical Products	2.32	2.56	2.41
	(*vi*) Coal and Petroleum Products	0.34	0.38	0.37
	(*vii*) Non-metallic Mineral Products	1.04	1.33	1.36
	(*viii*) Basic Metals	1.29	1.10	1.11
	(*ix*) Metal Prodcts	0.88	0.72	0.82
	(*x*) Non-electrical Engineering Products	1.27	1.35	1.51
	(*xi*) Electrical Engineering Products	0.63	0.60	0.71
	(*xii*) Transport Equipment	0.90	0.86	1.07
	(*xiii*) Miscellaneous Industries	1.83	1.98	2.48
3.	Electricity	1.71	2.14	2.19
4.	Construction	5.74	7.64	8.03
5.	Transport	4.97	4.96	5.20
6.	Services	26.61	27.79	28.74
7.	Total	100.00	100.00	100.00

2.27 As shown in table 2.3, the share of mining, manufacturing, electricity, construction and services in the gross domestic product should increase and the share of agriculture decrease marginally.

2.28 The following paragraphs highlight the major targets and the rationale for them.

AGRICULTURE

2.29 The estimated gross cropped area in 1977-78 is 173.92 million hectares, including 142.32 million hectares of net sown area and 31.60 million hectares sown more than once. Thus the cropping intensity now is 1.22. Additional irrigation potential of 17 million hectares is expected to be created in the next five years. Additional utilisation is estimated at 15 million hectares. In order to project cropping intensity an equation was estimated with cropping intensity as a function of the irrigation ratio (the irrigated area/ cropped area) with data for the period 1961-62 to 1973-74. Assuming the additional irrigation potential, and the parameters of the equation, the gross cropped area in 1982-83 is estimated as 180.03 million hectares, including an unchanged net area (142.32 million hectares) and 37.71 million hectares sown more than once, so that cropping intensity will rise from 1.22 to 1.26 mainly due to a higher irrigation ratio.

2.30 The gross irrigated area in 1977-78 is estimated as 48.41 million hectares. This is likely to increase to 63.41 million hectares in 1982-83. This means that the gross irrigated area will be growing at the rate of 5.54 per cent per annum during 1977-78/1982-83 as against the past growth rate of 3.18 per cent during the period 1961-62|1973-74. The agricultural strategy depends critically on the achievement of the large planned step-up in the growth of irrigation capacity.

2.31 The gross area has been allocated between different crops on the basis of trend growth rates of the percentage share of each crop in the gross cropped area. The area projected for each crop has again been allocated between high-yielding varieties and irrigated and unirrigated components on the basis of estimated trend growth rates. However, in the case of pulses and commercial crops, the trend projections of area were revised upwards because trend projections would be associated with serious demand-supply imbalances. Policy instruments will be used to induce higher acreage allocations for these crops. Some downward adjustment is made in the projected acreage of wheat.

2.32 As regards yields, three-year averages of yields, for the period 1973-74 to 1975-76, estimated on the basis of crop cutting experiments have been used to project the outputs of grain crops. (Table 2.4.).

Table 2.4 : Foodgrains Yield : HYV, Irrigated and Unirrigated

Sl. No.	Crop	Yield (Kgs. per hectare) : 3-year average					
		H.Y.V.		Irrigated		Unirrigated	
		1970-71 to 1972-73	1973-74 to 1975-76	1970-71 to 1972-73	1973-74 to 1975-76	1970-71 to 1972-73	1973-74 to 1975-76
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Rice	2231	1929	1358	1154	743	863
2.	Wheat	2101	1930	1688	1608	876	790
3.	Other Cereals	1066	1001	1275	1394	607	627

Source : Government of India, NSSO.

No increase in yields is postulated in the case of these crops because yields have been stagnating in recent years and efforts would be required even to maintain them. For sugarcane and jute and mesta, historical growth trends in productivity have been projected to 1982-83.

2.33 The projected output of major crops in 1982-83, estimated with the above assumptions and procedures, is showing in Table 2.5.

Table 2.5 : Area, Yield Level and Output of Principal Crops in 1982-83

Crop	Area (Million Hectares)	Yield (Kgs. per Hectare)	Output (Million Tonnes)
(1)	(2)	(3)	(4)
Paddy :			
HYV Irrigated	20.56	1929	39.66
Other Irrigated	1.33	1263	1.68
Unirrigated	18.63	863	16.08
Total	**40.52**	**1417**	**57.42**
Wheat :			
HYV Irrigated	17.00	1930	32.81
Other Irrigated	1.00	1260	1.26
Unirrigated	4.60	790	3.63
Total	**22.60**	**1668**	**37.70**
Other Cereals :			
Irrigated	4.50	1001	4.51
Unirrigated	41.39	627	25.95
Total	**45.89**	**702**	**30.46**
Pulses :			
Irrigated	3.13		
Unirrigated	22.97		
Total	**26.10**	**597**	**15.58**
Sugarcane :			
Irrigated	3.37	55.8 (Tonnes/Hec)	188.05
Cotton :			
Irrigated	3.20	310	58.35
Unirrigated	5.26	75	23.20
Total	**8.46**	**165**	**81.55** (lakh bales)
Jute and Mesta :			
Irrigated	0.04		
Unirrigated	1.21		
Total	**1.25**	**1232**	**85.60** (lakh bales)
Other Crops :			
Irrigated	9.28		
Unirrigated	22.56		
Total	**31.84**		
Gross Cropped Area :			
Irrigated	63.41		
Unirrigated	116.62		
Total	**180.03**		

2.34 It will be seen in Annexure I that the projected growth rates of the output of major crops are much higher than the recorded growth rates during the period 1967-68/1976-77—except in the case of wheat. Thus, grain output is projected to grow 3.03 per cent instead of 1.85 per cent in the last decade. In the case of cotton, jute, oliseeds, the escalation of the growth rate is even higher.

2.35 Although Yield assumptions for irrigated, unirrigated and HYV areas are conservative, higher growth rates are expected to accrue from a massive shift of area from the unirrigated to the irrigated and the HYV categories in the case of grain crops. The assumed yield levels for irrigated and high-yielding variety areas include the fertilizer effect at normal levels of application.

2.36 Individual balances for principal crops are discussed below. In a few cases some supply-demand gaps are projected. These gaps may be covered by better yield performance.

Foodgrain Crops

2.37 An output level of 57.4 million tonnes of paddy is considered feasible and is recommended as the target. The growth rate of paddy output works out to 3.22 per cent per annum as compared to the growth rate of 1.53 per cent during 1967-68/1976-77. The target recommended for wheat is 37 million tonnes. The target proposed for jowar, bajra and other cereals is 30.5 million tonnes. The per capita absorption of these cereals, some of which are inferior, is likely to fall. The output target for pulses is 15.58 million tonnes. The proposed targets for various cereals and pulses add up to a total foodgrain target of 140.48 million tonnes.

Sugarcane

2.38 The demand for sugarcane is estimated to be 188 million tonnes in 1982-83. The components are shown in the Table 2.6 below :—

Table 2.6 : Supply—Demand Balance of Sugarcane in 1982-83

Sugarcane required for	Unit	1982-83
Sugar (recovery 10%) . . .	Million Tonnes	62.09
Seed, chewing, etc. at the rate of 12%	-do-	22.56
Gur & Khandsari . . .	-do-	103.35
Total output of sugarcane . .	-do-	188.00

This level of production is considered a feasible production target. The cane requirements are derived from the targets for the production of white sugar, gur and Khandsari.

Cotton

2.39 Raw cotton demand is anticipated to be 84.7 lakh bales for the production of 1,220 million Kgs. of yarn in 1982-83 (Table 2.7). Adding extra factory consumption, khadi and ambar charkha requirements and exports of particular varieties, the total demand is estimated to be 92.5 lakh bales. The irrigated area in cotton is assumed to increase 10.4 per cent per annum. Given the yield levels in irrigated and unirrigated areas (310 and 75 kgs. per hectare, respectively), the output target is set at 81.5 lakh bales for 1982-83.

Table 2.7 : Cotton Balance 1982-83

Sr. No.	Consuming Product	Unit	Production	Consumption Norm Kg/bale	Requirement of Raw Cotton (lakh bales of 170 Kgs each)
(0)	(1)	(2)	(3)	(4)	(5)
	Cotton Yarn :				
1.	Mill Sector	Mill Kgs.	575		
2.	Decentralised	-do-	560		
3.	Export	-do-	25		
4.	Hosiery	-do-	60		
5.	Miscellaneous	-do-			
	Total 1 to 5		**1220**	**144**	**84.7**
6.	Extra Factory Consumption				3.0
7.	Khadi/Ambar Charkha				2.3
	Total				**90.0**
8.	Export of Cotton				2.5
9.	Demand				92.5

Jute and Mesta

2.40 On the basis of a material balance exercise, the demand for jute goods whould be 14.21 lakh tonnes in 1982-83 allowing for product substitution. Of this, about 5 lakhs tonnes represents the export component. The demand in terms of raw jute would be 82.42 lakh bales. Adding village consumption of the order of 3.5 lakh bales and the export of one lakh bales, the total demand turns out to be 86.92 lakh bales in 1982-83. As against this, the output of raw jute is expected to attain the level of 85.60 lakh bales in 1982-83. An import of 6 lakh bales is anticipated for 1982-83. The resulting supply-demand balance for raw jute for 1982-83 is shown in Table 2.8.

Table 2.8 : Jute Balance 1982-83

Item	Unit	1982-83
Total Demand for Jute Goods	Lakh Tonnes	14.21
Demand in terms of Raw Jute	Lakh bales (180 Kgs. each)	82.42
Demand for Village Consumption	-do-	3.50
Exports of Raw Jute	-do-	1.00
Total	-do-	86.92
Output of Raw Jute	-do-	85.60
Imports (Raw Jute)[1]	-do-	3—,6.00

[1] Imports are provided for to provide for additions to stock of around 2 lakh bales and to mitigate the effect of fluctuations in output.

Vegetable Oils

2.41 The demand for edible oils for liquid use is estimated to be 27.32 lakh tonnes in 1982-83. The oil equivalent of estimated vanaspati demand would be 8.19 lakh tonnes. The demand for oil for soap, paints, varnishes and lubricants etc., adds up to 8.87 lakh tonnes. Adding exports of the order of 1 lakh tonnes, the total demand for edible and non-edible oils in 1982-83 is likely to be 45.38 lakh tonnes. The details are shown in Table 2.9.

Table 2.9 : Demand for Edible and Non-edible Oils in 1982-83

Item	1982-83
	(Lakh Tonnes)
1. Edible Oils (Liquid Use)	27.32
2. Vanaspati (Oil Equivalent)	8.19
3. Soap (Oil Equivalent)	4.67
4. Paints, Varnishes and Lubricants, etc.	4.20
Total (Domestic Demand)	**44.38**
5. Exports (Oil Equivalent)	1.00
Grant Total	**45.38**

The availability of vegetable oils from domestic sources is projected to be 39.38 lakh tonnes as shown in Table 2.10.

Table 2.10 : Availability of Vegetable Oils in 1982-83

Item	1982-83
	(Lakh Tonnes)
1. Net availability from Major Oilseeds	29.38
2. Net availability from other Oilseeds including Copra and Cottonseed	11.00
3. Total Supply	40.38
4. Exports	1.00
5. Domestic Supply	39.38

The output target for major oilseeds is fixed at 112 lakhs tonnes. This implies a step-up of 20 lakh tonnes over the output level in the current year. This step-up is considered absolutely necessary to prevent serious shortages of edible oil. Effective policy measures will have to be taken to induce the required escalation in oilseed area and yield. In some areas oilseed production has recorded a high growth rate in the past. For example, groundnut production in Gujarat has grown at a rate exceeding 4 per cent over a long period. Also, mustard and rapeseed production has been increasing at the rate of 4.49 per cent per annum for the country as a whole. Therefore, given the required effort, the proposed oilseed output growth rate (4 per cent) should be feasible. However, the oil balance requires a faster growth of output and increasing use of other oilseeds.

Milk

2.42 The demand for milk is projected to be 32.95 million tonnes in 1982-83. With the launching of the project 'Operation Flood II', the supply base of milk is proposed to be widened. Taking into account the impact of this project, the level of milk production is anticipated to be 32.00 million tonnes in 1982-83, as against an estimated level of 25.48 million tonnes in 1977-78. The increase implies an annual growth rate of 4.66 per cent. On the basis of this level of output, availability of milk per capita per annum should rise to 45.62 kgs. from the present estimate of 39.91 kgs.

Feed and Fodder

2.43 The execution of "Operation Flood II" would require larger supplies of cattle feed and fodder. The National Commission on Agriculture had estimated shortfalls in the availability of green fodder, dry fodder, and concentrates of the order of 129.00, 140.40

and 8.50 million tonnes respectively in 1973-74. The magnitude of this gap would have widened since 1973-74. Using different recommended feeding schedules for ordinary and improved (milch and dry) cattle, feed and fodder requirements are estimated as under :

Table 2.11 : Demand for Cattle Feed and Fodder 1982-81

Year	Dry Fodder	Green Fodder	Concentrates
			(Million Tonnes)
1982-83 . .	349.14	452.72	34.75

The area needed to produce the needed dry fodder and green fodder in 1982-83 is estimated as 8.45 million hectares. The required area allocation for fodder has been provided for in the plan projections. The animal husbandry and milk programmes are expected to induce the necessary area-shift by farmers.

Forestry and Fishery

2.44 Programmes for these employment-intensive sectors are detailed in the Chapter on Agriculture. The Plan provides for a growth rate of 8.92 per cent for the forestry sector and 4.06 per cent for the fishing sector.

Overall Agricultural Growth

2.45 The overall rate of growth for the agricultural sector during the next five years is computed to be 3.98 per cent per annum. Agricultural supply projections are beset with uncertainty. Therefore it may be desirable to think of agricultural production targets not as fixed point estimates but as ranges. In the above discussion the lower limits have been indicated. But assuming better yield performance and/or above-average weather conditions, the output targets for 1982-83 can be higher. On this basis, the following ranges are indicated for major agricultural commodities.

1. Foodgrains . . . 140.48—144.48 million tonnes
2. Sugarcane . . . 188 million tonnes
3. Raw Cotton . . . 81.50—92.5 lakh bales (170 Kg. each).
4. Jute and Mesta . . 85.60 lakh bales (180 kg. each)
5. Oilseeds (Major) . . 112—115 lakh tonnes

If the upper limits are realised a higher growth rate will be achieved in the agricultural sector. If, however, unexpected demand-supply gaps emerge, provision has been made to cover them through necessary imports.

The 10-Year Perspective For Agriculture

2.46 Important magnitudes for the agricultural sector have been projected for 1987-88 as well as 1982-83. During the five years ending 1987-88 the irrigation potential will have to increase by another 22 million hectares, the additional utilisation being 20 million hectares. These figures are comparable with the additional potential and utilisation planned for the next five years (17 and 15 million hectares). Production projections for 1987-88 are summarised in Table 2.12.

Table 2.12 : Projected Levels of Agricultural Production : 1987-88

Sr. No.	Crops	Unit	Levels
(0)	(1)	(2)	(3)
1.	Foodgrains . .	Mill. Tonnes	164.00—169.00
2.	Sugarcane . .	Mill. Tonnes	225.00
3.	Cotton . . .	Lakh Bales	100.00
4.	Jute and Mesta . .	Lakh Bales	103.00
5.	Oilseeds	Lakh Tonnes	136.00

The per capita availability of foodgrains implicit in the targets for 1982-83 is 177 kgs. per year. This may have to increase to 190 kgs. by 1987-88, on the assumption that the growth of foodgrains demand on the part of the middle and high-income populations will decelerate, but the growth of demand from the low-income population will accelerate as greater purchasing power percolates. On these assumptions, the total demand for foodgrains may be 169 million tonnes in 1987-88. Ifa lower per capita availability is assumed, it may be less by 5 million tonnes. The demand for sugar is projected to be 79 lakh tonnes in 1987-88. The imbalance in the oilseeds market may continue even up to 1987-88 if domestic production does not increase fast enough.

OTHER SECTORS

Coal

2.47 The sectoral demand profile for coal is projected in Table 2.13. Since the life of high quality coking coal reserves is strikingly short, it is necessary to try to slow down depletion. Accordingly it is estimated that imports may be of the order of 1.0 million tonnes by 1982-83. Imports will also be helpful in improving the performance of those steel plants in the country where productivity is low due to poor quality of domestic coal.

Table 2.13 : Demand and Production of Coal 1976-77 (Actuals), 1982-83 and 1987-88

Consuming Sector	Requirement of Coal		
	1976-77 (Actuals)	1982-83	1987-88
(0) (1)	(2)	(3)	(4)
			(Million Tonnes)
I. Coking & Blendable Coal			
1. Steel Plants . } 2. Coke Oven etc. }	22.60	34.00	46.00
II. Non-Coking Coal			
3. Railways . .	13.10	11.80	10.30
4. Power Generation	28.90	54.00	84.00
(Coal based)	(1.60)	(4.00)	(6.00)
5. Cement . . .	4.90	7.20	10.00
6. Fertilizer N_2			
(a) Coal based .	—	2.20	3.30
(b) Others . .	0.70	2.50	4.00
7. Soft Coke & LTC .	4.30	6.50	9.00

(0)	(1)	(2)	(3)	(4)
	8. Brick & Others .	20.10	27.80	35.40
		(0.50)	(0.50)	(0.50)
	9. Colliery Consumption	3.40	3.50	3.50
III.	Indigenous Demand .	98.00	149.50	205.50
		(2.10)	(4.50)	(6.50)
IV.	Export . . .	0.60	1.00	1.00
V.	Total Demand . .	98.60	150.50	206.50
		(2.10)	(4.50)	(6.50)
VI.	Imports . . .	..	1.00	3.00
VII.	Production . . .	101.27	149.00	202.00

NOTES: 1. In estimation of production to meet demand, 1.0 mill. tonnes of higher quality imported coal has been taken as equivalent to 1.5 million tonnes of indi genous coal.

2. Figures in bracket indicate middlings.

2.48 The projected demand in 1987-88 (206.5 million tonnes) is expected to be met from domestic production to the extent of 202 million tonnes and imports (mainly coking coal) of the order of 3 million tonnes.* With 3 million tonnes of import of coking coal by 1987-88 the balance life of high quality coal reserves is estimated at 66 years at projected 1987-88 production levels.

Petroleum

2.49 The crude production estimate for 1982-83 is 18.00 million tonnes. There is a case for limiting the off-shore output projection to 9 million tonnes, giving weight to the conservation argument. The throughput requirement is likely to be 35.65 million tonnes, assuming 95 per cent utilisation of the refining capacity. Thus crude imports of the order of 17.65 million tonnes will be necessary. The total crude throughput of 35.65 million tonnes will yield 33.15 million tonnes of petroleum products. Since the demand for petroleum products in 1982-83 is estimated to be 36.32 million tonnes (Table 2.14), 3.17 million tonnes of product imports are projected. Figures of naphtha requirements for fertilizers and petrochemicals production and fuel oil requirements for oil-based fertilizer production are based on recent estimates of plantwise production. The demand for kerosene is projected on the basis of the estimated expenditure elasticity and the assumed 2.21 per cent annual growth in private expenditure.

2.50 The consumption of motor spirit, which after a sharp decline in 1974-75 in response to the price rise, has shown a higher annual growth in recent years, is estimated to grow 5 per cent annually during the next five years. Demand projections for motor spirit based on this growth rate have been cross-checked with estimates taking into account the expenditure elasticity of demand derived from time series data.

2.51 Diesel pumpsets accounted for 49 per cent of the total number of pumpsets installed as per the Livestock Census of 1972. Considering that less than 40 per cent of the villages stand electrified, at least one-third of the pumpsets installed during the next plan period can be assumed to be diesel-operated. Thus if 1 million oil-driven pumpsets are assumed to be installed in the Plan, the demand for Light Diesel Oil will grow 10 per cent per annum.

2.52 The longer-term (1987-88) demand projection for crude petroleum is 47.5 million tonnes. Its apportionment between domestic production and imports will depend on price movements and the progress of domestic exploration and production.

Table 2.14 : Demand Projectsions of Petroleum Products, 1977-78 to 1982-83

Sl. No.	Product	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
								(000 tonnes)
1.	L.P.G.	369	407	425	496	649	707	771
2	M.S.	1316	1382	1451	1524	1600	1680	1764
3.	Naphtha	2191	2461	2900	3124	3396	3538	3689
4.	A.V. Gas/NLG	29	30	32	34	36	38	40
5.	SB.P.S./Hexane	54	59	64	69	74	79	84
6.	Refinery Gas	20	21	21	21	21	21	21
7.	Benzene/Toluene	56	57	57	57	57	57	57
	Sub Total	**4035**	**4417**	**4950**	**5325**	**5833**	**6120**	**6426**
8.	Kerosene	3313	3446	3584	3727	3876	4031	4192
9.	A.T.F.	957	1028	1104	1186	1273	1367	1468
10.	H.S D.	7085	7652	8264	8925	9639	10410	11243
11.	L.D.O.	1077	1185	1304	1434	1577	1735	1909
12	J.B.O./Wash Oil	79	81	83	85	87	89	91
13.	M.T.O.	78	83	88	93	98	103	108
14.	Iomex	20	30	66	92	92	92	92
	Sub-Total	**12609**	**13505**	**14493**	**15542**	**16642**	**17827**	**19103**
15.	Fuel Oils (General trade)	3582	3672	3764	3858	3954	4053	4154
16.	Fuel Oils (Fertilizers)		600	1056	1392	1751	1954	2100
17.	Fuel Oils (Power plants)	2162	1655	1816	1978	2108	2098	2088
	Sub-Total	**5744**	**5927**	**6636**	**7228**	**7813**	**8105**	**8342**
18.	Lubes/Greases	456	479	503	528	554	582	611
19.	Bitumen	885	938	994	1054	1117	1184	1255
20.	Pet. Coke (Raw)	184	207	255	277	299	321	345
21.	Wax	47	50	53	56	59	63	67
22.	C.B.F.S./P. Extract	106	109	118	135	145	155	165
23.	Miscellaneous	4	8	8	8	8	8	8
	Sub Total	**1682**	**1791**	**1931**	**2058**	**2182**	**2313**	**2451**
	Grand Total	**24070**	**25640**	**28010**	**30153**	**32470**	**34365**	**36322**

*This equals 4.5 million tonnes of indigenous coal.

Fertilizers

2.53 The commissioning schedule of fertiliser plants suggests that in 1982-83 the production of nitrogen may be 4.5 million tonnes and the production of P_2O_5 about 1.25 million tonnes. Allowing for slippage, recommended production targets are 4.10 million tonnes of N and 1.125 million tonnes of P_2O_5. The demand estimates and the gaps to be covered by imports are shown shown in Table 2.15.

2.54 The outlook for 1987-88 is that the 1982-83 capacity will have to be nearly doubled. Advance action towards this objective is being provided for in the five-year plan.

Table 2.15 : Fertilizer Balance : 1982-83

Nutrient	Demand*	Production	Imports
1	2	3	4
		(Thousand tonnes)	
N	5250	4100	1150
P	1600	1125	475
K	1000	..	1000

*Including stock demand.

Cement

2.55 The inclusion of the new Minimum Needs Programme in the next Five Year Plan will *inter-alia* raise the construction component of total investment and hence the demand for construction materials. In particular, cement demand is estimated to rise to 31 million tonnes in 1982-83. Domestic production is expected to be in the range of 29-30 million tonnes, so that 1-2 million tonnes will have to be imported.

2.56 The demand projection for 1987-88 is 40.0 million tonnes.

Mild Steel

2.57 The escalation of rural construction would also have an impact on the demand for mild steel. The domestic demand profile for mild steel is projected in Table 2.16.

Table 2.16 : Mild Steel Demand Projections

Consuming Sector	1977-78	1982-83	1987-88
(0) (1)	(2)	(3)	(4)
		(Million tonnes)	
I. Manufacture of Machinery and Metal Products	**3.33**	**5.10**	**7.34**
Transport Equipment .	0.59	0.88	1.23
Electrical Equipment . .	0.27	0.41	0.62
Non-Electrical Equipment	0.60	0.98	1.28
Metal products . .	0.48	0.69	0.99
	1.94	**2.96**	**4.12**
Small Scale Industry, Miscellaneous Uses and Defence . . .	1.39	2.14	3.22
II. Construction Sector .	3.87	5.70	7.90
III. Addition to Stocks .	..	0.10	0.16
Total Demand . .	7.20	10.90	**15.40**

Against a total domestic demand of the order of 10.9 million tonnes, mild steel production is targeted to be 11.8 million tonnes. No additional capacity is expected to materialise during the period of the next plan in shaped steel products. The exportable surplus of mild steel is expected to be 1.5 million tonnes. But to meet deficits in the supplies of certain categories, particularly shaped products, imports of the order of 0.6 million tonnes are contemplated. Total domestic demand in 1987-88 is anticipated to be 15.4 million tonnes.

Non-Ferrous Metals

2.58 Five of the seven major non-ferrous metals (aluminium, copper, zinc, lead and antimony) are produced in the country in significant quantities. But a substantial part of the demand for these metals, except aluminium, has been met in the past from imports. The mineral base can permit the country to be self-sufficient only in aluminium and, to some extent, in copper. Over the last decade, aluminium output has been growing at the rate of 8.5 per cent per annum, copper output 11 per cent per annum and lead output about 16 per cent per annum. Continuing growth in all these industries is anticipated. But substantial imports are also envisaged. A higher rate of growth of non-ferrous metal production involves the development of non-ferrous metal mines which takes a long time. The production of aluminium, copper and zinc is also extremely power intensive. And the projects implemented so far have entailed extremely high domestic resource costs and very low rates of return. Therefore, while the launching of sound projects is not ruled out, substantial capacity expansion should be considered only over a longer time horizon than the next five years. In the meantime, it would be efficient to meet the demand deficit with imports. In the case of aluminium, even if new capacities are sanctioned, additional production would materialise only in the plan period beyond 1983. Copper and zinc smelting capacities are already in excess of the indigenous availability of concentrates. Import-based smelters are considered undesirable because they are extremely capital intensive. The accepted balances are shown in Table 2.17.

Table 2.17 : Non-Ferrous Metals Balances, 1982-83, 1987-88

Metal	Demand*		Production 1982-83	Imports 1982-83
	1982-83	1987-88		
(1)	(2)	(3)	(4)	(5)
Aluminium .	370	545	300	70
Copper . .	80	120	40	40
Zinc . . .	130	170	75	55
Lead . . .	60	80	15	45

*Primary metal

Demands for 1987-88 have been projected in Table 2.17. But the capacity expansion decisions for the longer period will be taken on the basis of the complex technical, economic and conservation considerations mentioned above.

Sugar

2.59 Sugar exports are likely to be constrained in the immediate future by an unattractive price situation in the world market and growing domestic demand. The projected export level is 0.5 million tonnes. The proposed 1982-83 production target of 6.2 million tonnes is consistent with the sugarcane target of 188 million tonnes.

2.60 The sugar production target for 1987-88 is 7.9 million tonnes.

Textiles

2.61 The demand for textiles (including synthetic, blended and mixed fabrics) in 1982-83 has been projected to be 12,200 million metres. This projection is based on a detailed study of the income elasticities of demand for different varieties of textiles and possible export demand. The projection includes the requirement of synthetic, blended and mixed fabrics estimated at 3,000 million metres. The share of the decentralised sector in 1982-83 is proposed to be increased to as much as 7,600 million metres from 5,200 million metres in 1977-78. Cotton yarn requirements for this pattern of production will be 1,220 million kgs. Textiles demand in 1987-88 is estimated to be around 15,300 million metres.

Jute Manufactures

2.62 Projections of the 1982-83 demand for jute manufactures particularly sacking and hessian, are derived from expected levels of the output of various commodities for which these packaging materials are needed. Coefficients of jute manufactures per unit of commodity output, updated by the Ministry of Commerce, have been used for this purpose. Packing requirements for cement, sugar, fertilizer, foodgrains, oilseeds, cotton textiles, flour, salt, etc. add up to 7.92 lakh tonnes of sacking and 1.17 tonnes of hessian. Adding 12.5 per cent of the specific requirements so estimated, i.e. 1.14 lakhs tonnes, to provide for unspecified sectors, the overall demand would be 10.23 lakh tonnes. From this figure, a quantity (1.02 lakh tonnes) is deducted on account of the likely substitution effect of the availability of synthetic substitutes. Thus the net domestic demand would be 9.21 lakh tonnes in 1982-83. Exports are projected to be 5 lakh tonnes. The total demand for jute manufactures is, therefore, placed at around 14 lakh tonnes. The details are shown in Table 2.18.

Table 2.18 : Estimated Demand for Sacking, Hessian and other Jute Manufactures, 1982-83

Sl. No.	Consuming Commodity	Unit	Production 1976-77	Production 1982-83	Norms of Jute, Sacking or Hessian	Requirements of Jute Goods 1976-77	Requirements of Jute Goods 1982-83
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
							(Thous. Tonnes)
Sacking							
1.	Cement	Mill. Tonnes	18.85	29.00*	5.6/000t	105.56	162.40
2.	Sugar	Mill. Tonnes	4.82	6.20	12.0	57.84	74.40
3.	Flour	Mill. Tonnes	1.80	2.22	13.0	23.40	28.90
4.	Salt	Mill. Tonnes	6.00	7.45	8.0	48.00	59.60
5.	Fertilizers (Materials)	Mill. Tonnes	7.14	17.40	5.0	35.70	87.00
6.	Foodgrains, Oilseeds, etc.	Mills. Tonnes	120.80	152.00	2.5	302.00	380.00
						572.50	**792.30**
Hessian							
1.	Fertilizers (Materials)	Mill. Tonnes	7.14	17.40	5.0	35.70	87.00
2.	Cotton Cloth	Mill. Metres	7835	10200	3 per '000 mill. metres	23.50	30.60
						59.20	**117.60**
	Total Sacking & Hessian					**631.70**	**909.90**
	Add 12.5— for other sectors					78.96	113.74
						710.66	**1023.64**
	Deduction 10% as Substitution Effect of Synthetics and Bulk Packaging						(—)102.36
							921.28
	Exports					456.00	500.00
	Total Demand					**1166.66**	**1421.28**
						Say	1400.00

* Imports 2 million tonnes

Paper

2.63 The demand for paper and paper board in 1982-83 is estimated to be 1425 thousand tonnes. The demand includes additional requirements of an expanded adult education programme for which funds are being allocated. Domestic output is planned to be 1250 thousand tonnes, so that imports of the order of 175 thousand tonnes would be necessary. For 1987-88, demand is placed at 1940 thousand tonnes.

2.64 Newsprint projects currently under implementation are expected to yield an output of 120 thousand tonnes in 1982-83. Since the total newsprint demand is projected to be 270 thousand tonnes, 150 thousand tonnes of imports will be necessary.

Electricity Generation

2.65 The industrial requirements of electricity have been worked out with the targets of industrial production and consumption norms of major industries. Consumption in other industries is estimated as 60 per cent of the consumption in major industries on the basis of the pattern of consumption in the recent past. Thus total industrial consumption is projected to be 83.8 billion Kwh. Railway traction and irrigation requirements have been estimated on the basis of their sector plans. Consumption in other sectors, namely, the domestic, commercial, public lighting, water works and miscellaneous sectors is estimated either by applying trend growth rates or on the basis of behaviourial relations between sectoral power consumption and output growth. The aggregate consumption demand turns out to be 128.838 billion Kwh. in 1982-83. Deducting the net energy available from non-utilities and adding transmission losses (18 per cent in 1982-83) and auxiliary losses (assumed to be 6.35 per cent), the aggregate generation required would be 167.02 billion units. Therefore, a target of 167 billion Kwh. is recommended for 1982-83. The target for 1987-88 is 265 billion Kwh. Details are given in Table 2.19.

Table 2.19 : Electricity Balance 1982-83

Sl. No.	Consuming Sector	Requirement	
		1982-83	1987-88
(0)	(1)	(2)	(3)
			(Million Kwh.)
1.	Major Industrial Consumption	52373.06	83445.00
2.	Other Industrial Consumption	31423.84	50067.00
	Total Industrial Consumption	**83796.90**	**133512.00**
3.	Domestic Consumption	11281.80	18862.00
4.	Commercial Consumption	8233.90	13696.00
	Domestic & Commercial Consumption	**19515.70**	**32558.00**
5.	Public Lighting	1311.29	2112.00
6.	way Traction	3506.60	3872.00
7.	Irrigation	16779.30	27023.00
8.	PWW, Sewerage & Miscellaneous	3928.70	6327.00
	All India Consumption	**128838.50**	**205404.00**
	Generation Non-Utilities	6800.00	7800.00
	Auxiliary Losses	1000.00	1000.00
	Net Energy Available	5800.00	6800.00
	Energy Consumption Utilities	**123038.50**	**198604.00**
	Transmission Losses @ 18%	27008.00	40678.00
	Auxiliary Losses @ 6.35%	10174.00	18010.00
	Generation Required (Utilities)	**160220.50**	**257292.00**
	Total Generation Required	**167020.50**	**265092.00**

Railways

2.66 The originating traffic in 1982-83 is projected to be 313.0 million tonnes. The traffic in important commodities has been projected on the basis of the expected production levels of rail using sectors and other relevant considerations such as the diversion of traffic in some items to the road transport sector, the location of superthermal power plants at pithead sites, the planned movement of POL products in some regions through pipelines, and changing geographical pattern of production. The sectorwise figures are given in Table 2.20.

Table 2.20 : Railway Traffic Demand Projections

Sl. No.	Commodity	1977-78 (Anticipated)	1982-83	1987-88
(0)	(1)	(2)	(3)	(4)
				(Million tonnes)
1.	Steel			
	(*i*) Finished products from Steel Plants (Pig Iron for sale - Mild Steel)	9.30	13.95	
	(*ii*) Raw Materials for Steel Plants other than Coal	22.60	40.40	
	Total (Steel)	**31.90**	**54.35**	
2.	Coal	84.50	114.00	
3.	Iron Ore for Export	11.00	16.00	
4.	Cement	13.70	18.90	
5.	Fertilizers (in materials)	7.80	15.00	
6.	Foodgrains	19.60	18.20	
7.	POL Products	13.00	15.60	
8.	Other Goods	47.00	50.00	
9.	Railway Materials	11.50	11.00	
10.	**Grand Total**	**240.00**	**313.05**	**400.00**

III

Major Perspective Projections

2.67 Projections for 1987-88, cited for individual sectors above, have been consolidated in Table 2.21.

Table 2.21 : Estimates of the Output of Important Commodities 1982-83 and 1987-88

Sl. No.	Item	Unit	1977-78	1982-83	1987-88
(0)	(1)	(2)	(3)	(4)	(5)
1.	Foodgrains	Mill. Tonnes	121.00	140.48 to 144.48	164.00 to 169.00
2.	Sugarcane	Mill. Tonnes	156.90	188.00	225.00
3.	Oilseeds	Lakh Tonnes	92.00	112.00 to 115.00	136.00
4.	Cloth	Mill. Mtrs.	9400.00	12200.00	15300.00
5.	Coal	Mill. Tonnes	103.20	149.00	202.00
6.	Iron Ore	Mill. Tonnes	43.00	65.00	77.00
7.	Nitrogenous Fertilizers (N)	Thou. Tonnes	2060.00	4100.00	6370.00
8.	Phosphatic Fertilisers (P_2O_5)	Thou. Tonnes	660.00	1125.00	2250.00
9.	Paper & Paper Board	Thou. Tonnes	900.00	1250.00	1750.00
10.	Mild Steel	Mill. Tonnes	7.73	11.80	15.40
11.	Cement	Mill. Tonnes	19.20	29.00 to 30.00	40.00
12.	Electricity Generation	G.W.H.	100.00	167.02	265.09
13.	Railways Originating Traffic	Mill. Tonnes	240.00	313.05	400.00

Although estimates have been made for 1987-88 for all the 89 sectors of the input-output table, only a few of them are reported. As already indicated, these longer-time projections have been used to provide in the investment pattern for some advance action in anticipation of capacities that will be needed in the late 80s. Special attention has been given to perspective projections for long gestation sectors. The gestation period does not exceed ten years for most of the industrial sectors.

IV

The Conservation Perspective

2.68 Non-renewability of critical resources requires that the depletion of mineral resources be judiciously planned. The present knowledge of mineral reserves is admittedly inadequate because survey and exploration work has not yet been carried out in all parts of the country. In fact, only 46 per cent of the total geographical area had been mapped by 1975.

2.69 The available estimates of reserves are not only based on incomplete mapping, but where mapping has been completed, the investigations have been "preliminary" in the case of many materials. Reserve estimates based on preliminary surveys are denoted as "indicated" or "inferred" as distinguished from "measured" estimates based on detailed investigations. In the case of kyanite, chromite, copper, limestone, asbestos and bauxite 80 to 90 per cent of the estimates are merely "indicated" or "inferred".

2.70 The ratio of "inferred" to "measured" reserves is also low in the case of reserves of minerals which have been leased out. Leasehold reserves account for 64 per cent of iron ore, 84 per cent of kyanite and the whole supply of barytes, mica, chromite and magnesite.

2.71 Although for many metals considerable recycling possibilities exist, in India recycling remains under-developed except in the case of certain types of metallic scrap.

2.72 The magnitude of the presently known, recoverable reserves, and their balance life in 1987-88, calculated on the assumption of depletion rates of 1987-88 continuing, are shown in Table 2.22.

Table 2.22 : Balance Life of known Reserves at 1987-88 Consumption Levels for Suggested Targets of Production, Exports and Imports

Minerals	Estimated Recoverable Reserves	Depletion (1987-88)	Balance life at 1987-88 production levels in years
(1)	(2)	(3)	(4)
		(Million Tonnes)	
A. *Where Production suggested to correspond to demand plus export*			
1. Non-coking coal	32000	1290	191
2. Iron ore—Hematite	9400	660	126
3. Iron ore—Magnetite	860	60	106
4. Bauxite	1970	33	352
B. *Where Production suggested to correspond to demand only*			
5. Manganese ore	79.49	17	30
6. Chromite	13.1	1.6	52
C. *Where Production plus import suggested to correspond to demand*			
7. Copper	3.68	0.52	53
8. Zinc	3.42	0.54	31
9. Lead	1.50	0.19	52
10. Rock Phosphate	30	10.2	20
11. Crude oil		200	
12. Coking coal	3100	345	66

NOTE :— For iron ore (hematite), iron ore (magnetite), bauxite, manganese ore, copper, zinc and lead recent estimates (1-1-1977) of reserves have been adopted for estimating recoverable reserves. For the other minerals recoverable reserves have been computed on the basis of reserves as on 1-1-1975.

It will be seen that the balance life is strikingly short for manganese ore and chromite, copper and zinc, rock phosphate and coking coal. Therefore, in planning production and trade in sectors absorbing these intermediates, it should be necessary in the future to establish acceptable depletion rates.

2.73 In addition, the following policy measures need early attention :

(a) Integrated geological mapping of the whole country, on a suitable scale, should be given very high priority. Exploration to shift reserves from the 'inferred' to 'measured' categories should be expedited.

(b) Trade, pricing and royalty policies should be adjusted to induce socially optimal rates of depletion.

(c) Depending upon foreign exchange availability, imports of scarce materials, such as copper, lead, zinc, rock phosphate, coking coal, crude oil and asbestos should be maintained at significant levels in relation to requirements, so that the depletion of domestic reserves is slowed down.

(d) Leasehold patterns should be modified to facilitate better reserve measurement and optimal depletion.

(e) Research and development effort to evolve technologies for the exploitation of low-grade and complex ores should be intensified, specially in the case of non-ferrous metals.

(f) Research effort, and the monitoring and adaptation of foreign technological developments, should also be intensified in order to develop renewable or less-scarce substitutes for non-renewable materials and sources of energy.

V

THE DEMOGRAPHIC PERSPECTIVE

2.74 A review of the demographic perspective is summarised in Tables 2.23, 2.24, 2.25 and 2.26. The total population is expected to grow from about 634 million at present to 760 million in 1988 (Table 2.23).

Table 2.23 : Population—Estimates for 1978, 1983 and 1988
(As on March 1)

	Urban Population	Total Population	Col. (2) as Percent of Col. (3)
(1)	(2)	(3)	(4)
			(In Million)
1978	135.6	634.2	21.38
1983	156.7	697.2	22.48
1988	179.7	760.5	23.63

The rate of urbanisation (the proportion of the urban population) is likely to continue to rise from 21.4 per cent at present to 23.6 per cent after a decade.

2.75 The birth rate, the death rate and the population growth rate are all expected to keep declining in successive quinquennia. The average annual rate of population growth is projected to be 1.97 per cent in the quinquennium 1976--81 and decline to 1.66 per cent in the quinquennium 1986—91 (Table 2.24).

Table 2.24 : Assumptions Underlying Population Projections 1971—91

Period	General Fertility Rate		Average Expectation of Life at Birth (years)		Birth Rate	Death Rate	Growth Rate
	Decline Compared to the Previous Quinquennium (Per cent)	Absolute Level	Male	Female	(Per Thousand of Population)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1971—76	9	175	50.1	48.8	36.6	15.2	21.4
1976—81	12	154	52.6	51.6	32.9	13.2	19.7
1981—86	14	133	55.1	54.3	29.5	11.6	17.9
1986—91	12	117	57.6	57.1	27.0	10.4	16.6

NOTE:—The projections relate to mid-year of the period.

2.76. The age structure of the population is changing so that the dependency ratio is likely to decrease, but the proportion of the population in the working age 15 to 59 is likely to increase from 54 per cent at present to 58 per cent in 1988 (Table 2.25).

Table 2.25 : Age Structure of the Population Projections for 1978, 1983 and 1988

(As on March 1)

Age Group	1978	1983	1988
(1)	(2)	(3)	(4)
			(percentage)
0–4	14.6	13.4	12.3
5–14	25.9	24.8	23.4
15–59	54.1	56.1	58.2
60+	5.4	5.7	6.1

2.77. Therefore, the labour force which is due to increase by 30 million in the next five years will increase by another 30 million between 1983 and 1988, inspite of a decrease in the population growth rate (Table 2.26).

Table 2.26 : Labour Force Projections* 1978, 1983 and 1988

(As on March 1)

	Rural			Urban			All India		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
								(In	Million)
1978	140.3	77.9	218.2	38.1	9.0	47.1	178.4	86.9	265.3
1983	154.1	85.7	239.8	44.4	10.6	55.0	198.5	96.3	294.8
1988	167.3	93.4	260.7	51.4	12.3	63.7	218.7	105.7	324.4

*Aged 5 years and above. For details of the methodology of labour force and employment projections see chapter on Employment and Manpower.

2.78. It has been shown in the Chapter on Employment and Manpower that in the next five years if gross domestic product grows 4.7 per cent a year, employment (in standard person years) should grow 5.3 per cent a year with the proposed pattern of production. Computations for the longer period show that employment (in standard person years) should continue to grow at the rate of 5.2 per cent a year between 1982-83 and 1987-88. Employment growth of this order should reduce the unemployment problem to a negligible magnitude by 1988. This outcome, however, depends on the proposed pattern of investment and production being actualised.

VI

The Prospect for the Reduction of Poverty

2.79 For the purpose of redistributive exercises, the Planning Commission has defined a poverty line on the basis of recommended nutritional requirements of 2400 calories per person per day for rural areas and 2100 calories per person per day for urban areas. In rupees the poverty line is the mid-point of the expenditure class (in 1973-74 consumer expenditure data) in which the calorie-needs are satisfied. Thus, by implication, the expenditure on non-food items included in the poverty line is the actual expenditure in this expenditure class. On this basis, the cut-off points turn out to be Rs. 61.8 and Rs. 71.3 for rural and urban areas at 1976-77 prices. It has already been noted that consumer demand has been projected on the assumption that the consumption deficiency of households below the poverty line will be made up to the extent of 75 per cent.

2.80. The percentage of population below the poverty line in 1977-78, 1982-83 and 1987-88, projected with the above cut-off points and estimated aggregated private consumption, is shown in Table 2.27. The percentage of population below 75% of the poverty line is also shown.

Table 2.27 : The percentage of population below the poverty line

Sl. No.	Percentage of Population					
	Below Poverty Line			Below 75% of Poverty Line		
	1977-78	1982-83	1987-88	1977-78	1982-83	1987-88
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1. Rural	47.85	38.70	27.28	26.42	19.39	11.88
2. Urban	40.71	35.33	26.23	22.34	18.35	12.26
3. All India	46.33	37.95	27.04	25.55	19.16	11.97

Without any redistribution the poverty percentage should fall from 46 per cent at present to 27 per cent after 10 years, if the assumed rates of growth materialise. By using 75 per cent of the poverty line as the cut-off point, about 26 per cent of population are poor today and 19 per cent would be poor in 1982-83. But with the redistribution built into the plan, these 19.16 per cent population should rise above the modest poverty line by 1982-83. And by 1987-88, the 12 per cent of the population below the modest poverty line should also move up to it.

2.81. These figures indicate the rough poverty-reducing impact of the proposed production plan. It is hoped that production planning will progressively provide for a consumption pattern which tends to abolish poverty altogether by the early 90s. But success in this endeavour will depend on how far the implementation of priority programmes really redistributes employment and purchasing power in favour of the poor. Without purchasing power the poor cannot buy what they need even if it is produced.

ANNEXURE—I

Projections of Physical output of Major Commodities—1982-83

Sl. No.	Sector/Commodity	Growth Rate (%per Annum Compound)			Unit	Output	
		Commodity Actual 1976-77	Commodity Target 1982-83	Sectoral Projection 1982–83		1977-78 (Anticipated)	1982-83
		1967-68	1977-78	1977-78			
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Sector 1-Paddy			**3.22**			
1.	Paddy	1.53	3.22		Mill. Tonnes	49.00[6]	57.40[6]
	Sector 2-Wheat			**4.28**			
2.	Wheat	5.41	4.28		Mill. Tonnes	30.00	37.00
	Sector 3-Jowar			**1.42**			
	Sector 4-Bajra			**3.64**			
	Sector 5-Other Cereals			**(—)0.90**			
3.	Jowar, Bajra & Other Cereals	0.46	1.01		Mill. Tonnes	29.00	30.50
	Sector 6-Pulses			**3.69**			
4.	Pulses	0.30	3.69		Mill. Tonnes	13.00	15.58
	Foodgrains-Total	1.85	3.03		Mill. Tonnes	**121.00**	**140.48—144.48**
	Sector 7-Sugarcane			**3.69**			
5.	Sugarcane	3.63	3.69		Mill. Tonnes	156.90	188.00
	Sector 8-Jute			**4.83**			
6.	Jute & Mesta	J 0.47 M 4.69	4.83		Lakh Bales (180 Kgs. each)	67.60	85.60
	Sector 9-Cotton			**4.86**			
7.	Cotton	1.54	4.86		Lakh Bales (170 Kgs. each)	64.30	81.50—92.50
	Sector 10-Plantation			**3.17**			
	Sector 11-Other Crops			**4.34**			
8.	Oilseeds (Major)	1.32	4.01		Lakh Tonnes	92.00	112.00—115.00
	Sector 12-Milk & Milk Products			**5.23**			
9.	Milk	1.89	4.66		Mill. Tonnes	25.48	32.00
	Sector 13-Other Animal Husbandry			**4.01**			
	Sector 14-Forest & Logging			**8.92**			
	Sector 15-Fishing			**4.06**			
	Sector 16-Coal & Lignite			**8.01**			
10.	Coal	4.39	7.62		Mill. Tonnes	103.20	149.00
	Sector 17-Petroleum & Natural Gas			**10.82**			
11.	Crude Petroleum	4.82	10.82		Mill. Tonnes	10.77	18.00
	Sector 18-Iron Ore			**8.61**			
12.	Iron Ore	5.58	8.61		Mill. Tonnes	43	65
	Sector 19-Other Minerals			**10.89**		5	10
	Sector 20-Misc. Food Products			**4.96**			

COMMUNITY HEALTH CELL
LIBRARY
AND
DOCUMENTATION
UNIT

ANNEXURE—I (Contd.)

0	1	2	3	4	5	6	7
	Sector 21-*Sugar*			**3.58**			
13.	Sugar	8.73	3.58		Mill. Tonnes	5.20	6.20
	Sector 22-*Gur & Khandsari* . . .			**3.53**			
	Sector 23-*Hydrogenated Oil* . . .			**5.39**			
14.	Vanaspati	2.69	5.39		Th. Tonnes	600	780
	Sector 24-*Edible Oil* . .						
	Other n Hydrogenated Oil			**3.68**			
	Sector 25-*Tea & Coffee* . . .			**2.56**			
	Sector 26-*Other Beverages* . . .			**3.28**			
	Sector 27-*Tobacco Manufactures* . .			**1.67**			
	Sector 28-*Cotton Textiles* . . .			**3.80**			
15.	Cotton Yarn	0.40	4.91		Mill. Kgs.	960	1220
16.	Cloth-Mill Sector	(—)1.30	1.84		Mill. Mtrs.	4200	4600
	Sector 29-*Cotton Textiles in Handloom & Khadi*			**7.00**			
17.	Cloth-Decentralised Sector . . .	2.40	7.89		Mill. Mtrs.	5200	7600
	Sector 30-*Woollen & Silk Textiles* . .			**4.86**			
	Sector 31-*Art Silk Fabrics* . . .			**4.58**			
	Sector 32-*Jute Textiles*			**3.48**			
18.	Jute Manufactures	0.30	3.48		Th. Tonnes	1180	1400
	Sector 33-*Readymade Garments & Made up Textile Goods*			**8.25**			
	Sector 34-*Misc. Textile Products* . .			**4.75**			
19.	Rayon Tyre Cord	6.16	5.99		Th. Tonnes	15.70	21.00
20.	Nylon Tyre Cord	26.10[3]	7.74		Th. Tonnes	6.20	9.00
	Sector 35-*Carpet Weaving* . . .			**7.83**			
	Sector 36-*Wood Products* . . .			**11.26**			
	Sector 37-*Paper & Paper Products & Newsprint*			**6.25**			
21.	Paper & Paper Board	3.37	6.79		Th. Tonnes	900	1250
22.	Newsprint	7.10	15.65		Th. Tonnes	58	120
	Sector 38-*Printing & Publishing* . .			**10.18**			
	Sector-39-*Leather & Leather Products* .			**5.44**			
	Sector 40-*Leather Footwear* . .			**5.81**			
23.	Leather Footwear	(—)1.80[1]	7.39		Mill. Pairs	14	20
	Sector 41-*Rubber Products* . . .			**7.75**			
24.	Automobile Tyres	10.90	7.87		Mill. Nos.	6.3	9.2
25.	Bicycle Tyres	0.44	2.71		Mill. Nos.	28	32
26.	Rubber Footwear	(—)3.33[1]	3.01		Mill. Pairs	43.10	50.00
	Sector 42-*Plastics & Synthetic Rubber* .			**7.28**			
27.	Synthetic Rubber	0.81	12.30		Th. Tonnes	28	50
	Sector 43-*Petroleum Products* . .			**8.23**			
28.	Petroleum Products (Incl. Lubricants) .	5.20	8.23		Mill. Tonnes	22.32	33.15
	Sector 44-*Misc. Coal & Petroleum Products*			**10.87**			
	Sector 45-*Inorganic Heavy Chemicals* .			**8.99**			
29.	Sulphuric Acid	7.90	8.90		Th. Tonnes	1900	2910

ANNEXURE—I—Contd.

0	1	2	3	4	5	6	7
30.	Caustic Soda	6.90	8.58		Th. Tonnes	530	800
31.	Soda Ash	4.90	7.78		Th. Tonnes	550	800
	Sector 46—Organic Heavy Chemicals			**3.25**			
32.	Methanol	19.70	16.27		Th. Tonnes	40	85
33.	D.M.T.	[5]	13.05		Th. Tonnes	26.0	48.0
	Sector 47—Chemical Fertilizers			**14.80**			
34.	Nitrogenous Fertilisers (N)	20.00	14.76		Th. Tonnes	2060	4100
35.	Phosphatic Fertilizers (P_2O_5)	10.80	11.26		Th. Tonnes	660	1125
	Sector 48—Insecticides, Fungicides, etc.			**11.50**			
36.	D.D.T.	4.19	14.87		Th. Tonnes	4.5	9.0
37.	B.H.C.	11.96	12.57		Th. Tonnes	26	47
	Sector 49—Drugs & Pharmaceuticals			**5.48**			
	Sector 50—Soaps & Glycerine			**4.80**			
	Sector 51—Cosmetics			**6.01**			
	Sector 52—Man-made Fibres			**7.79**			
38.	Rayon Filament	1.99	4.05		Th. Tonnes	41	50
39.	Rayon Staple Fibre	5.25	7.14		Th. Tonnes	85	120
40.	Nylon Filament and Staple	22.97	6.79		Th. Tonnes	18	25
41.	Polyester Filament and Staple	22.50[2]	21.43		Th. Tonnes	25	66
42.	Acrylic Fibre	..	..		Th. Tonnes	..	16
	Sector 53—Other Chemicals			**7.83**			
	Sector 54—Refractories			**6.58**			
43.	Refractories	0.06	6.58		Th. Tonnes	800	1100
	Sector 55—Cement			**8.60**			
44.	Cement	5.70	8.60 to 9.34		Mill. Tonnes	19.20	29.00 to 30.00
	Sector 56—Other Non-metallic Mineral Products			**11.68**			
	Sector 57—Iron & Steel (Metal & Ferro-alloys)			**8.45**			
45.	Pig Iron for Sale	5.96	4.56		Mill. Tonnes	1.72	2.15
46.	Mild Steel	7.30	8.83		Mill. Tonnes	7.73	11.80
47.	Tool, Alloy & Special Steels	8.45[4]	9.16		Th. Tonnes	542	840
	Sector 58—Iron & Steel Castings and Forgings			**8.11**			
48.	Steel Castings	2.40	9.46		Th. Tonnes	70	110
49.	Steel Forgings	9.81	8.02		Th. Tonnes	102	150
	Sector 59—Iron & Steel Structures			**11.78**			
	Sector 60—Non ferrous Basic Metal Industries (incl. alloy)			**9.02**			
50.	Aluminium	8.50	10.76		Th. Tonnes	180	300
51.	Copper	11.00	11.70		Th. Tonnes	23	40
52.	Zinc	0.30[3]	11.77		Th. Tonnes	43	75
53.	Lead	15.93[3]	13.40		Th. Tonnes	8	15

ANNEXURE—I—Contd.

0	1	2	3	4	5	6	7
	Sector 61—*Metal Products* . . .			**7.31**			
	Sector 62—*Tractor & Other Agricultural Implements*			**6.57**			
54.	Agricultural Tractors . .	14.91	4.56		Th. Nos.	36	45
	Sector 63—*Machine Tools* . . .			**9.00**			
55.	Machine Tools	11.78	9.86		Rs. Mill.	1000	1600
	Sector 64—*Office, Domestic and Commercial Equipment*			**4.36**			
56.	Typewriters	2.42	3.88		Th. Nos.	62	75
	Sector 65—*Other Non-Electrical Machinery*			**11.00**			
57.	Ball & Roller Bearing	11.82	10.39		Mill. Nos.	30.5	50.0
58.	Dumpers & Scrapers	15.42[3]	8.45		Nos.	300	450
59.	Crawler Tractors.	17.63[3]	11.63		Nos.	300	520
60.	Road Rollers	(—)7.24	14.87		Nos.	504	1000
61.	Sewing Machines	0.50	2.02		Th. Nos.	390	431
62.	Cotton Textile Machinery & Accessories.	13.26	7.89		Rs. Mill.	1300	1900
63.	Coal & Other Mining Machinery . .	10.05	13.40		Rs. Mill	160	300
64.	Cement Machinery	(—)3.01	13.56		Rs. Mill.	180	340
65.	Sugar Machinery	10.15	9.86		Rs. Mill.	500	800
66.	Printing Machinery	35.11	27.23		Rs. Mill.	30	100
67.	Rubber Machinery	25.25[2]	14.87		Rs. Mill.	70	140
68.	Paper & Pulp Machinery . . .	14.13	17.32		Rs. Mill.	135	300
	Sector 66—*Electric Motors* . . .			**11.80**			
69.	Electric Motors	6.60	11.84		Mill. H.P.	4.0	7.0
	Sector 67—*Electrical Cables, Wires*. .			**12.01**			
70.	A.C.S.R. Conductors	1.49	14.87		Th. Tonnes	70	140
	Sector 68—*Batteries*			**6.80**			
71.	Dry Batteries	7.32	6.01		Mill. Nos.	620	830
72.	Storage Batteries (organised sector) .	6.50	6.81		Th. Nos.	1500	2085
	Sector 69—*Electric Household Goods* .			**7.97**			
73.	Electric Bulbs	9.11	6.23		Mill. Nos.	170	230
74.	Flourescent Tubes	13.58	9.24		Mill. Nos.	18	28
	Sector 70—*Communication & Electronic Equipment*			**6.34**			
	Sector 71—*Other Electrical Machinery* .			**8.42**			
75.	Hydro Turbines	22.54[4]	3.84[4]		Mill. Kw.	1.11	1.34
76.	Thermal Turbines		17.75		Mill. Kw.	1.52	3.44
77.	Electric Transformers	12.20	14.22		Mill. Kva.	18.0	35.0
	Sector 72—*Ships & Boats* . . .			**5.58**			
	Sector 73—*Rail Equipment* . . .			**4.84**			
78.	Diesel Locomotives	4.30	4.86		Nos.	142	180
79.	Electric Locomotives	(—)1.10	2.27		Nos.	59	66
80.	Railway Coaches	(—)5.60	6.19		Nos.	1000	1350
81.	Railway Wagons	(—)4.26	7.21		Th. Nos.	12.0	17.0

ANNEXURE—I—Concld.

0	1	2	3	4	5	6	7
	Sector 74—*Motor Vehicles* . . .			**4.50**			
82.	Pessenger Cars	(—)0.65	3.89		Th. Nos.	40.0	48.4
83.	Commercial Vehicles	4.66	10.20		Th. Nos.	40	65
	Sector 75—*Motor Cycles and Bicycles* .			**6.41**			
84.	Bicycles (Organised Sector) . . .	5.31	4.99		Th. Nos.	2900	3700
85.	Motor Cycles, Scooters and Mopeds .	17.22	7.94		Th. Nos.	290	425
	Sector 76—*Other Transport Equipment* .			**6.01**			
	Sector 77—*Watches and clocks* . .			**2.49**			
	Sector 78—*Misc. Manufacturing Industries*			**6.73**			
	Sector 79—*Construction* . . .			**10.55**			
	Sector 80—*Gas, Electricity & Water-Supply*			**10.80**			
86.	Electricity Generation	8.64	10.80		G.W.H.	100	167
	Sector 81—*Railways*			**5.12**			
87.	Railways Originating Traffic . .	2.20	5.45		Mill. Tonnes	240	313
	Sector 82—*Other Transport* . . .			**6.90**			
	Sector 83—*Communication* . . .			**6.29**			
	Sector 84—*Trade, Storage & Warehouse* .			**6.60**			
	Sector 85—*Banking & Insurance* . .			**6.24**			
	Sector 86—*Real Estate & Ownership of Dwellings*			**4.93**			
	Sector 87—*Education*			**10.99**			
	Sector 88—*Medical Health* . . .			**6.39**			
	Sector 89—*Other Services* . . .			**4.32**			

(1) Based on production in organised sector.

(2) 1968-69 to 1976-77.

(3) 1972 to 1976.

(4) 1969-70 to 1976-77.

(5) Production commenced in 1973.

(6) In terms of rice.

Chapter 3
Financial Resources

FINANCING OF THE PUBLIC SECTOR PLAN

In the light of the postulated growth of the economy (at an average rate of 4.7 per cent a year over the next five years), the total resources required to finance the public sector plan outlays are estimated to be Rs. 69,380 crores. If a Plan of this size is to be financed, a massive resource mobilisation effort would be necessary. Independent studies of the aggregate investment resources available in the whole economy, assuming realistic household, corporate and Government saving rates, show that resources of this order are indeed available in the economy. The household saving rate has already risen to 14 per cent of disposable income. There is considerable utilisable liquidity in the banking system because of the high rate of growth of deposits, particularly time deposits. Considerable foreign exchange reserves are also available for utilisation in the next few years. And, finally, there is scope for a substantial escalation of public sector saving particularly in view of the recent buoyancy of revenues additional resource mobilisation already achieved during the last five years and improvement in the surplus earning capacity of Central public-sector undertakings.

3.2. The main task, therefore, is to actualise potential public saving into resources for public sector investment. The main specific measures required for this purpose are discussed in this Chapter. Some of the new sources of investment funds which would need to be tapped include : (a) selective subsidy reductions, (b) improvement in the returns from Central public sector enterprises which are now at the low level of 4.8 per cent (after tax), through improvements in efficiency and price adjustments, (c) similar increases in returns from Central and State transport undertakings, irrigation and power projects, and other State Government enterprises, (d) progressive surcharges added to land revenue, (e) cesses on market arrivals and (f) mopping up of a part of capital gains of land and property owners, in addition to the rationalisation of direct and commodity taxes and fees. On the expenditure side, a renewed effort is called for to decelerate the growth of non-Plan outlays. Conspicuous consumption in the private sector will need to be curbed and a vigorous effort undertaken to promote and mobilise voluntary private savings. Monetary policy will have to be integrated with fiscal policy in order to facilitate non-inflationary resource mobilisation. Above all, it will be necessary to realise the targeted levels of production in different sectors and, to this end, implement Plan programmes on schedule and maximise the output from them. Efficiency in the use of invested resources and maximum utilisation of production capacities can add materially to production and resource generation.

3.3. The total resources for the Plan in both the public and private sectors in the period 1978—83 are estimated as Rs. 116,240 crores. The main components of this estimate are shown in Table 3.1.

Table 3.1: Aggregate Resources for the Five Year Plan (1978—83)

	(Rs. crores at 1977-78 prices)
1. Public Sector Saving	27,444
2. Saving of Financiai Institutions	1,973
3. Saving of the Private Corporate Sector	9,074
4. Household Saving 1	62,364
5. **Total** Domestic Saving	100,855
6. Net Inflow from abroad 2	
(a) External assistance	3,955
(b) Drawing on Foreign Exchange Reserves	1,180
7. Budgetary Provision for Current Development Outlay	10,250
Aggregate Resources	*116,240*

1 Excluding assets created by family labour.

2 Balance of payments concept.

3.4 The savings of the public sector over the Plan period are estimated as Rs. 27,444 crores. Taking into account the provision for current development outlay, possible draft of the public sector on private savings, and the net inflow from abroad, the total resources for Plan outlay in the public sector are estimated at Rs. 69,380 crores. This would leave Rs. 46,860 crores available for investment in the private sector and in those investments in the public sector, including a part of the addition to inventories, which are financed by financial institutions and do not constitute a part of the public sector Plan outlay under present arrangements. Efforts will be made to influence the sectoral allocation of long-term investments financed by financial institutions so that they conform to Plan priorities. At present the category public sector Plan outlay does not really include all public sector investments 1/ nor is there effective coordination of private sector investments financed by the financial system.

Resources for the Public Sector

3.5 The proposed financing of the public sector Plan is detailed in Table 3.2.

Table 3.2 : Estimated Budgetary Resources for the Public Sector Plan

(Rs. crores at 1977-78 prices)

1. Central and State Governments' resources on revenue account at 1977-78 rates of taxation	12,889
(a) Balance from current revenues	12,766
(b) Net transfer from current revenues to funds	123
2. Contribution of public enterprises at 1977-78 fares, freights, tariffs and rates	10,296
(a) Centre	7,881
(b) States	2,415
3. Additional resources mobilisation	*13,000*
(a) By Centre	9,000
(b) By States	4,000
4. Market borrowings of Government, public enterprises and local bodies (net)	15,986
5. Small savings	3,150
6. State provident funds	2,953
(a) Centre	1,417
(b) States	1,536
7. Term loans of financial institutions (net)	*1,296*
(a) from L.I.C.	980
(b) from R.B.I.	166
(c) from R.E.C.	670
(d) Less repayments to financial institutions	(—)520
8. Miscellaneous capital receipts (net)	450
9. External assistance (net)	5,954*
10. Utilisation of foreign exchange reserves	1,180
11. Total	67,154
12. Uncovered gap	2,226
13. Aggregate resources	69,380

1/ The bulk of the investment financed by public sector financial institutions like ARDC, IDBI, IFC and HUDCO does not form part of public sector Plan outlay.

* Net of repayments only. Interest has been allowed for under item 1(a).

Balance from Current Revenues

3.6. In view of the response of different taxes to the increase in national income and production in the past years and the anticipated improvement in collections due to further tightening up of the tax administration, the total tax revenues of the Central and State Government during the five-year period 1978—83 at the existing levels of taxation are estimated at Rs. 83,976 crores. Interest receipts and non-tax revenues are estimated at Rs. 18,374 crores. The aggregate revenue thus adds up to Rs. 102,350 crores. Deducting from this the provision of Rs. 89,461 crores for non-Plan expenditure, the balance available for the Plan has been taken as Rs. 12,889 crores. The projections are shown in Table 3.3.

Table 3.3 : Estimate of the Balance for the Plan from Current Revenues of the Central and State Governments at the Existing Levels of Taxation

(Rs. crores at 1977-78 prices)

I. Revenue Receipts	
(i) Central Taxes	55,332
(ii) State Taxes	28,644
(iii) Non-Tax Revenues	18,374
Total (I)	**102,350**
II. Revenue Expenditure	
(i) Interest Payments	13,685
(ii) Other Non-Development Expenditure	32,597
(iii) Non-Plan Development Expenditure	35,509
(iv) Maintenance Expenditure on Fifth Plan Schemes	5,850
(v) Revision of Emoluments not included under (ii), (iii) and (iv) above	1,427
(vi) Grants to Union Territories	270
(vii) Transfer to Funds (net)	123
Total (II)	**29,461**
III. Balance from current revenues	12,889

3.7 The estimate of the balance from current revenues has been worked out on the assumption that the maintenance expenditure on the Fifth Plan Schemes expected to be completed by the end of 1977-78 would become non-Plan outlay with effect from April 1, 1978. Such maintenance expenditure is estimated to be around Rs. 5,850 crores for the five-year period 1978—83*. Provision has also been made for the full cost of the revision of emoluments which has already been sanctioned at the Centre and in the States or for which firm commitments exist. Interest payments have been calculated on the basis of the dues on outstanding debt and anticipated increase in the Central and State Governments' borrowing during the Plan period.

3.8 In calculating the balance of current revenue under present arrangements, provision has been made for fertiliser, food and export subsidies on the basis of the existing policies. The total for the five year period is expected to be Rs. 6,765 crores (inclusive of the provision for subsidy on imported fertilisers which is booked on the capital account under fertiliser transactions). Besides, an adhoc provi-

*The Annual Plan for 1978-79 has been formulated on the basis of the Fifth Plan concept of Plan outlay. In other words, it includes provision for maintenance expenditure on the Fifth Plan schemes expected to be completed by the end of 1977-78. On the basis of the concept of Plan outlay used for the formulation of the Annual Plan for 1978-79, the total provision for public sector Plan outlay during 1978-83 would be higher than that indicated above by Rs. 5,850 crores.

sion of Rs. 634 crores has been made for subsidies on controlled cloth, aluminium, etc. and for interest subsidies given by the Central Government. In the State estimates also, existing subsidies have been included in the base level figures of expenditure used for projections for the plan period. It is urgently necessary to reduce drastically the incidence of explicit and implicit subsidies in order to release resources for investment. Credit for possible reductions in subsidies has been taken separately in calculating additional resource mobilisation.

3.9 Moderate annual increases have been allowed under other items of non-Plan expenditure. Besides, a reasonable allowance has been made for proper maintenance of existing institutions, public works and other assets and facilities. But a serious effort on the part of the Central and State Governments to contain non-Plan expenditure is implicit in the estimates.

3.10 Estimates of the balance from current revenues for the Centre and the States will need to be revised after the recommendations of the Seventh Finance Commission and Government's decision thereon become available. In principle, any additional transfer of resources from the Centre to the States as a result of the recommendations of the Seventh Finance Commission should not alter the *overall* resources position as assessed now, provided that non-Plan expenditures are not allowed to increase beyond the levels provided for. Strict fiscal discipline and control of non-Plan expenditure is, therefore, crucial to the scheme of resource mobilisation envisaged for the Plan.

3.11 In projecting the balance from current revenues, no allowance has been made for the incidence of prohibition on State Budgets. To the extent that there is a net loss of revenue on this account, it would have to be made up from other sources to avoid a reduction in revenue surpluses available for the Plan.

Net Transfer from Current Revenues to Funds

3.12 Following the existing budgetary practices, the State Governments are likely to transfer a net amount of Rs. 123 crores to various Funds during the Plan period. Although these receipts would be available on capital account, they represent savings from public revenue.

Contribution of Public Enterprises

3.13 On the basis of existing pricing policies, the contribution of public enterprises, inclusive of depreciation provisions, towards the financing of the Plan, is estimated as Rs. 10,296 crores, as shown in Table 3.4.

Table 3.4 : Estimates of Gross Surplus of Central and State Enterprises in the Five-Year Period 1978-83 at Existing Prices, Tariffs and Rates

(Rs. crores at 1977-78 prices)

	Centre	States	Total
1. Railways	1,231	..	1,231
2. Posts and Telegraphs	1,765	..	1,765
3. State Electricity Boards	..	2,018	2,018
4. Road Transport Corporations	..	372	372
5. Others	4,885	25	4,910
Total	**7,881**	**2,415**	**10,296**

Railways

3.14 The gross surplus of the railways during the Plan period is estimated as Rs. 1,231 crores. Of this, Rs. 850 crores represent the depreciation provision while the balance is the retained surplus and net accrual to various Funds. The estimate is based on the assumption that the revenue earning traffic would increase from 214 million tonnes in 1977-78 to 275 million tonnes in 1982-83 and the minimum growth in passenger traffic would be 4 per cent per annum. The ratio of ordinary working expenses (excluding depreciation) to total gross traffic receipts is assumed to remain within the range of 76.4—76.7 per cent.

Posts and Telegraphs

3.15 The internal resources of Posts and Telegraphs during the Plan period are expected to be Rs. 1,765 crores. Of this, Rs. 378 crores would represent the depreciation provision, Rs. 125 crores would be the receipts under the OYT scheme and the balance of Rs. 1,262 crores would be the retained surplus from current earnings. The revenue has been projected by applying a growth rate of 6 per cent per annum to postal receipts and of 12 per cent per annum to telecommunication receipts. The growth rates assumed for expenditure on postal and telecommunication services are 8 per cent and 10 per cent respectively.

Other Central Government Enterprises

3.16 The gross internal resources of non-departmental Central Government enterprises are made up of depreciation provisions, retained profits and accruals of deferred expenditure to current revenues. Deducting from these resources repayment of loans obtained from sources other than the Central Government, and the amounts required for meeting working capital requirements, the amount available for the Plan is assessed at Rs. 4,710 crores. This figure is computed without taking into account the cash deficits of some enterprises as these deficits would be covered by non-Plan loans from the Centre which have been allowed for in calculating net miscellaneous capital receipts. The resources of Port Trusts and Damodar Valley Corporation are estimated as Rs. 175 crores.

State Governments' Enterprises

3.17 The gross surplus of State Electricity Boards is estimated on the basis of the anticipated increase in the generation and sale of power. Similarly, the resources of State Road Transport Corporations have been estimated on the basis of the likely growth of traffic handled by these Corporations. Credit has also been taken for the anticipated surplus of some of the State Governments' non-departmental undertakings. The cash deficits of State Governments' non-departmental undertakings have, however, not been deducted as these are expected to be covered by non-Plan loans which have been allowed for in estimating net miscellaneous capital receipts. It is urgently necessary to review the operation of these undertakings and take steps to put them on a sound financial footing.

Additional Resource Mobilization

3.18 The Central and State Governments and their enterprises have undertaken considerable additional

resource mobilisation during the Fifth Plan period. The measures adopted by them are expected to yield Rs. 13,407 crores over the five year period, 1974-79. This figure includes expected receipts in the coming year 1978-79. The share of the Centre and the States in this resource mobilisation is 59 per cent and 41 per cent respectively.

3.19 The pattern of additional resource mobilisation during the Fifth Plan is shown in Annexure I. It will be seen that nearly 40 per cent of total additional resources were raised by means of changes in railway fares and freight rates, postal and telecommunication charges, electricity tariffs and road transport fares. In the field of taxation, the major part of the additional receipts came from adjustments in excise duties and sales taxes. The abnormal price rise, which occurred before the commencement of the Fifth Plan and continued in the early part of the Plan period, facilitated changes in the rates of specific taxes as also in fares, freight rates, tariffs, etc. For the coming five years, the proposed additional resource mobilisation by the Central and State Governments and their enterprises is Rs. 13,000 crores—Rs. 9,000 crores for the Central Government and its enterprises and Rs. 4,000 crores for the State Governments and their enterprises. This amount cannot be regarded as excessive, for it is lower than the amount already mobilised during 1974—79 (Rs. 13,407 crores*). If the latter amount is inflated to 1977-78 prices, the proposed mobilisation would appear to be even lower.

3.20 At the Centre, the main areas in which further resource raising effort must be made are enumerated below.

Commodity Taxation

3.21 In a developing economy characterised by low income and the preponderance of small producers, the collection of small amounts of direct taxes from a multitude of low-income assessees presents insuperable difficulties. Indirect taxes have, therefore, to play a major role in resource mobilisation. Apart from raising additional resources for development, these taxes can be used to achieve several socio-economic objectives e.g., the restraining of conspicuous consumption and investment in non-priority sectors of the economy, mopping up of excessive or windfall profits arising in certain lines of activity, curtailing the domestic consumption of commodities in short supply or those required for export, encouraging desirable substitutions in the use of intermediates, and the encouragement of small scale and cottage enterprises by means of rate differentiation.

3.22 In the field of excise taxation, although the main thrust of policy will be towards rationalisation, some rate increase may be possible, and even necessary, in the case of individual items, particularly in the category of items "otherwise unspecified", keeping in view the objective of encouraging small and labour-intensive unit production and lower taxation of low-income consumption. The import duty revenue will increase as a result of further selective liberalisation of non-luxury imports and greater use of tariffs for regulating imports. This policy would free the economy of many irksome and irrational physical controls and mop up for public investment a part of the excessive profits that would otherwise accrue to importers and others dealing in imported commodities.

Direct Taxes

3.23 In the direct tax field, further effort will have to be directed towards reducing tax avoidance and evasion. The degree of progressivity in the direct tax system can also be further increased. In particular, there is substantial scope for raising the level and progressivity of wealth tax rates. The various concessions in the tax structure, other than those which stimulate middle income savings or labour-intensive or other priority production, need to be reviewed and if necessary withdrawn.

Reduction in Subsidies

3.24 As stated earlier, the cost of subsidies on fertilizers, food, exports, controlled cloth, etc., at present levels is expected to be of a very large order. It is necessary to bring about a drastic reduction in some subsidy rates in order to increase the availability of resources for the Plan. In general, subsidies should be admissible selectively to support low-income consumption and small-unit labour-intensive production. Subsidies which do not serve these purposes should be phased out.

Revision of the Pricing Policies of Public Enterprises

3.25 A Committee has been set up to study the structure of railway freight rates and fares and make recommendations for their revision. In view of the large gap between the internal resources of the railways and the requirement of funds for their development programme, it is imperative for them to raise further resources through a revision of fares and freight charges. There is also scope for increases in some of the postal rates. The Central Government's non-departmental enterprises, which now earn a post-tax rate of return of 4.8 per cent on investment should aim at earning 10 per cent per annum. In determining administered prices in important sectors, Government has already accepted 10-15 per cent (net of taxes) as a fair return. Therefore, a return of 10 per cent in public enterprises would seem to be a reasonable expectation. Some price adjustments will have to be allowed and it would be necessary for the enterprises to improve their capacity utilisation still further optimise their inventory levels and improve their operational efficiency through the introduction of modern management (operations research) techniques. These developments would require further professionalisation of management and the grant of greater autonomy to managers.

Increase in Contribution to Provident Funds

3.26 The rate of contribution to non-contributory provident funds by Government employees can be raised from 6 to 8.33 per cent. Alternatively, the existing rates of contribution could be related to basic pay plus dearness allowance as in the case of Employees' Provident Fund. The coverage of the

*From 1974-78 measures.

Employees' Provident Fund can be expanded, and the rate of contribution in the case of this Fund as well as other provident funds for private sector or semi-Government employees raised to at least 8.33 per cent, wherever the industries or the organisations concerned can be reasonably expected to afford an increase in the employers matching contributions.

Other Central Measures

3.27 These include (a) introduction of compulsory group insurance for employees in the entire organised sector and (b) continuance of the compulsory saving scheme for income-tax payers throughout the Plan period and an increase in the rates of required deposits for assessees with incomes above specified levels.

3.28 In the States, the main thrust of resource mobilisation will have to be in the following areas.

Agricultural Taxation

3.29 Agricultural production and income have risen considerably due partly to large public sector investment in agricultural research, extension, irrigation credit, fertilisers, etc. under successive Plans. The level of agricultural taxation, however, continues to be relatively low. Direct tax receipts from agriculture, chiefly land revenue and agricultural income-tax, constitute only about 1 per cent of the net domestic product from agriculture. The burden of commodity taxation also falls less heavily on agriculturists than on people in the urban areas. According to the Agricultural Census, 15 per cent of cultivators accounted for 60 per cent of the total operational net cultivated area in 1970-71. A major share of higher agricultural incomes, therefore, must have accrued to a small proportion of cultivators constituting the upper strata of rural society. But these incomes remain untaxed while similar urban incomes are subject to substantial taxation. Progressive taxation of these incomes at rates comparable to those payable by non-farm earners is now essential in order to secure horizontal equity as between the taxation of agriculturists and non-agriculturists, and to reduce the disparity between the less affluent and more affluent sections of the rural community itself.

3.30 With greater emphasis on agricultural development in the new Plan and guaranteed support prices for all major crops, income accrual in rural areas must increase further. There is, therefore, a strong case for calling upon the agriculturists to make a larger contribution towards the financing of the large public sector development outlays of the new Plan. The State Governments should once again consider the imposition of a progressive agricultural holdings tax in the form recommended by the Raj Committee. But if this is not considered feasible, surcharges at graduated rates must be added to land revenue in all States in order to introduce progression in the system of agricultural taxation. Cesses/surcharges on land revenue paid for the area in commercial crops should also be levied or increased where they exist.

Market Cesses

3.31 Punjab, Haryana, Karnataka and some other States are raising substantial revenues by way of cesses on market arrivals on farm produce in regulated markets. It would be desirable to levy such cesses in other States in all regulated markets and to raise the existing rates wherever they are low. The implementation of the regulated markets programme itself needs to be accelerated.

Revision of Irrigation Rates

3.32 The State Governments are incurring a huge loss on irrigation schemes. The total loss in the current year, inclusive of the loss on minor irrigation, is estimated to be around Rs. 300 crores. In certain States, receipts are not sufficient even to cover working expenses, let alone interest payments. The irrigation loss, in effect, represents a subsidy to farmers who take water from Government sources. A major part of the benefit of this subsidisation goes to the larger farmers. The social profitability of irrigation is certainly very high but since the private return to water users is also substantial there is no reason why they should not pay reasonable charges.

3.33 Large investments have already been made in irrigation and considerable further investment is contemplated in the foreseeable future. It is necessary to ensure that these investments do not impose a mounting burden on State budgets in the form of losses. The National Development Council in its Resolution on Power and Irrigation Systems adopted in September, 1976, emphasised that irrigation systems should be made to cover working expenses and yield, if possible, an extra return. Action taken in pursuit of the resolution has been very inadequate. A definite phased programme for the elimination of losses should not be postponed any longer. The State Governments should also consider imposition of betterment levies to recover a part of the capital cost of irrigation projects. Where levies already exist their collection is in heavy arrears; they should be collected with renewed determination.

Revision of Electricity Tariffs

3.34 The State Electricity Boards are also incurring a heavy loss. Fifteen out of 18 State Electricity Boards expect to incur a loss of Rs. 238 crores in the current year. Some of them are not able to meet even the current dues of interest on Government loans. The total investment of State Electricity Boards is expected to reach Rs. 7,000 crores by the end of 1977-78. The rate of return[1] on this investment is only 6 per cent.

3.35 The National Development Council in its Resolution referred to earlier recommended urgent steps to obtain a reasonable rate of return on investment in power projects. The tariff revisions undertaken by the Boards since then have been more than offset by increases in working expenses, depreciation and interest payments, so that their net resources

[1] Inclusive of electricity duty.

position has actually worsened instead of showing an improvement. It is, therefore, imperative for the Boards to undertake, *inter alia*, further tariff revisions in order to reduce their losses and earn a reasonable rate of return on the basis of a phased programme. A high-level Committee of experts is being set up to review the existing norms of the financial performance of the Boards and make recommendations for rationalising the tariff structure and improving the operation of the Boards. Apart from tariff revision, steps should be taken to improve receipts through an optimum use of the capacities created, economies in overheads, working expenses and transmission and distribution losses, better collection of dues, and the completion of projects on schedule. Losses on rural transmission should also be minimised by means of better system planning and operation.

Revision of Bus Fares

3.36 The Transport Corporations should also improve their operational efficiency and raise bus fares where these are comparatively low.

Mopping up of a part of the Capital Gains in Land and Property Values.

3.37 Fiscal action is necessary to mop up for the public sector a reasonable share of the enormous capital gains in land and property values in and around cities and towns. Taxes can be levied on vacant lands in cities and towns, where such taxes do not exist. Land valuation cesses can be levied and collected along with land revenue in the neighbourhood of new inter-State and State highways and district roads. There is a strong case for such cesses because State investments in roads bring enormous capital gains to landowners.

Other Taxes, Duties and Fares

3.38 In the sphere of the sales tax, there is considerable scope for reducing leakage through a streamlining of the tax administration. There is also need for rationalisation of the rates of different taxes, including sales tax rates, and their harmonisation on a zonal basis. Various fees, some of which may have been fixed long time back, also need to be reviewed.

Rural Debentures

3.39 The system of rural debentures whose proceeds are earmarked for specific local investments should be developed on an extensive scale.

Other Measures

3.40 Reference has already been made to the need to increase contributions to provident funds made by the Government employees. Serious consideration should also be given to increasing arrear collections. In addition, simplification of tax laws and procedures must be undertaken in order to speed up collections. Also, there is no basis for the assumption that every non-Plan outlay must automatically grow at a fixed compound rate of growth. A careful review of non-Plan outlays would reveal that their growth rates can be decelerated in many areas. Local bodies need to be induced to undertake further resource mobilisation through the use of the tax powers available to them and levy adequate charges for the services provided by them on a progressive basis so that the burden on State budgets on account of local projects is reduced.

Tax-Income Ratio

3.41 The tax measures of additional resource mobilisation will have to be adequate enough to raise the ratio of tax revenue to gross national product from 18.4 per cent in 1977-78 to about 23 per cent in 1982-83, if a public sector plan of the required size is to be financed.

Market Borrowings

3.42 The net market borrowings of the Central and State Governments, their enterprises and local bodies over the Plan period have been projected to be Rs. 15,986 crores. The escalation of borrowing from the present level of Rs. 1600 crores to an average of approximately Rs. 3200 crores a year during the coming five years assumes a vigorous drive on the part of commercial banks, the Life Insurance Corporation and other financial institutions to promote and mobilise savings. Besides, the required ratio of banks' investments in Government and other approved securities to their deposits may have to be raised. But an increase in this ratio should be reconciled with the need for funds for meeting the inventory requirements of public and private sector undertakings and for meeting other essential purposes. For this purpose, it would be necessary to undertake credit planning and regulate the flow of credit in consonance with plan priorities.

Small Savings

3.43 Taking into account the normal growth of households' contribution to small savings and the likely investment of the Employees' and other provident funds in the private sector in small savings, the total collection of small savings over the Plan period is estimated to be Rs. 3150 crores. To achieve this target, it will be necessary to intensify the small savings drive and bring more people, particularly agriculturists self-employed persons, within the fold of the small savings movement.

State Provident Funds

3.44 Taking into account normal growth of these funds as also the amounts to be credited to these funds on account of compulsory deposits, the total net accretion to provident funds at the Centre and in the States during the Plan period is likely to be Rs. 2953 crores—Rs. 1417 crores at the Centre and Rs. 1536 crores in the States.These estimates assume existing rates of contribution to provident funds. The yield from the suggested increase in the minimum rates of contribution has to be taken into account under "additional resource mobilisation".

Term Loans

3.45 In view of the anticipated increase in the investible funds of the Life Insurance Corporation, its fresh loans for power projects, housing and water supply during the plan period are projected to be

Rs. 980 crores. Loans from the Rural Electrification Corporation may be Rs. 670 crores and those from the Reserve Bank for participation in the share capital of cooperatives Rs. 166 crores. Allowing for repayments, the total net term loan finance has been calculated as Rs. 1,296 crores.

Miscellaneous Capital Receipts

3.46 This item represents the net effect of receipts and disbursements under a number of budget heads. The main source of receipts are recoveries of loans and advances from agriculturists, Government employees, local bodies, etc., deposits of non-Government provident funds, borrowings from the Reserve Bank against compulsory deposits of income tax payers, and net accretion to deposits and funds. Allowing for the likely non-Plan loans and advances to public sector undertakings, Government employees and foreign Governments, non-Plan outlay on items like State Trading, and the anticipated repayments of loans against compulsory deposits, the net miscellaneous capital receipts over the Plan period are estimated to be Rs. 450 crores.

External Assistance

3.47 On the basis of the balance of payments exercise, the total inflow of resources from abroad, net of repayments but without allowing for interest payments, is estimated as Rs. 7,134 crores. Assuming that foreign reserves would be drawn down by Rs. 1,180 crores, the requirement of net external assistance has been fixed as Rs. 5,954 crores. The utilisation of foreign exchange of this order is consistent with import targets and the pattern of domestic investment contemplated. If the absorption of external assistance in excess of this level is proposed, on suitable terms, it will be possible to absorb it only if additional matching domestic resoruces can be found. Otherwise, Plan priorities may be affected.

Utilisation of Foreign Exchange Reserves

3.48 Balance of payments projections show that by 1982-83 net depletion of the present foreign exchange reserves of the order of Rs. 1,180 crores will be necessary.

The Gap

3.49 Given the availability of various resources at assumed levels, a gap of Rs. 2,226 crores is expected to remain between the public sector plan size and resources. This gap will have to be covered either by real resources becoming available at levels higher than assumed or by deficits. If some deficit is unavoidable, commodity management will have to ensure that the prices of essential commodities remain stable. The Finance Ministry and the Reserve Bank of India are already taking measures to minimise State overdrafts with the Reserve Bank as they lead to unintended deficit financing.

Central Assistance to States

3.50 The allocation of Central assistance for State Plans for 1978-79 has been made in accordance with prevalent practices. The principles for the allocation of Central assistance would be reviewed after the recommendations of the Seventh Finance Commission and Government's decisions thereon become available.

Saving and Investment

3.51 The Five Year Plan 1978-83 envisages a total investment of Rs. 105,990 crores* at 1977-78 prices. This is to be financed through domestic savings of Rs. 100,855 crores and net inflow of Rs. 5.135 crores from abroad. The net inflow includes a net depletion out of current foreign exchange reserves of the order of Rs. 1,180 crores and net foreign aid of Rs. 3,955 crores. Thus, in accordance with the long-term objective of financial self-reliance, the ratio of net foreign aid to total investment will be only about 4 per cent as compared with 9 per cent in the Final Fifth Plan document.

3.52 The total provision for the public sector plan outlay will be about Rs. 69,380 crores comprising Rs. 59,130 crores as investment and Rs. 10,250 crores as current plan outlay.

3.53 Of the total investment about 56 per cent will be in the public sector and the balance of 44 per cent in the private sector :

Table 3.5 : Plan Investment 1978-83

Sl. No.	Sector	Amount
(0)	(1)	(2)
		(Rs. crores)
1.	Public Sector	59,130†
2.	Private Sector	46,860
	Total	**105,990**

The comparable public sector share in the Final Fifth Plan documents was 55 per cent.

Domestic Saving

3.54 Of the total domestic saving about 29 per cent amounting to Rs. 29,417 crores will be contributed by the public sector and public financial institutions, Rs. 9,704 crores i.e. about 9 per cent by the private corporate sector including cooperatives and the balance of Rs. 62,364 crores representing about 62 per cent of the total, by the households. The details by generating

*Including Current Plan outlay, the aggregate Plan Outlay will be Rs. 116240 crores.

†Excludes inventories in the Public sector.

sectors are indicated in the Annexure—II attached. The summary position is shown below :

Table 3.6 : Estimated Gross Domestic Savings* by Generating Sector

Sl. No.	Sector	Savings
		(Rs. crores)
1.	**Public Sector**	**27,444**
	(a) Central and State Budgets	13,148
	(b) Central and State Enterprises	14,296
2.	Financial Institutions	**2,754**
	(a) Reserve Bank of India	1,750
	(b) Others —public sector	223
	—private institutions	781
3.	Private Sector	**70,657**
	(a) Private Corporate Non-Financial Sector including Cooperatives	8,293
	(b) Household Sector	62,364
4.	Total Domestic Saving	100,855

3.55 The average rate of gross domestic saving to Gross National Product is estimated to rise from 19.8 @@ per cent in 1977-78 to 23.4@@ per cent in 1982-83. The overall marginal rate of saving is estimated to be around 35 per cent.

3.56 The strategy for financing investment, aims at a higher rate of growth of saving of the public sector. Accordingly savings in the public sector are estimated to increase from 4.1 per cent of GNP in 1977-78 to 7.4 per cent in 1982-83. Private saving during the same period is projected to rise from 15.7 per cent to 16.0 per cent of GNP, the increase being almost wholly in the corporate sector. Household saving, though considerably higher than the 1977-78 level, would not increase as a proportion of GNP. The detailed macro estimates of the disposable income, consumption and saving of public and private sectors are given in Annexures III & IV.

Table 3.7 : Extimated Saving by Sectors, 1977-78 and 1982-83

Sl. No.	Sector	Estimated Saving (Rs. crores)		Percentage to GNP		Percentage to the Disposable Income of the Sector	
		1977-78	1982-83	1977-78	1982-83	1977-78	1982-83
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	**Public Sector**	**3,362**	**7,888**	**4.1**	**7.4**	**29.8**	**41.4**
	(a) Government Administration	1,966	4,714	2.4	4.4	19.9	29.7
	(b) Autonomous Public Enterprises	1,396	3,174	1.7	3.0	100.0	100.0
2.	Private Corporate Sector	1,393	2,118	1.7	2.0	100.0	100.0
3.	Households	11,348	14,925	14.0	14.0	16.4	17.4
	Total	**16.103**	**24,931**	**19.8**	**23.4**	**19.7**	**23.3**

3.57 The last two columns of the table show that the saving rate of the government administration sector with respect to its own disposable income will have to increase from 19.9 per cent to 29.7 per cent over the five years 1978-83, and household saving as a proportion of household disposable income should increase by 1 per cent i.e. from 16.4 to 17.4. In the case of public and private corporate enterprises, the disposable income and gross saving are of course identical.

Public Saving

3.58 The saving of the public sector-Centre and States' revenue surpluses and public enterprises' surpluses—are shown in Table 1 of this Chapter. The saving of Public Financial institutions (RBI and nationalised banks) has been estimated on the basis of past trends. The aggregate saving of the public sector comprising Government administration including departmental enterprises, autonomous public enterprises and public financial institutions are estimated to rise from Rs. 3,362 crores in 1977-78 to Rs. 7,888 crores in 1982-83 i.e. from 4.1 to 7.4 per cent of GNP over the five year period 1978—83. The share of public sector in aggregate domestic saving would thus have to improve from about 21 per cent at present to about 32 per cent in 1982-83. The private corporate sector share remaining almost the same, the share of households would decline correspondingly.

Table 3.8 : Sector-wise Share in Total Saving, 1977-78 and 1982-83

Sl. No.	Sector	Share in Total Saving	
		1977-78	1982-83
(0)	(1)	(2)	(3)
		(Per cent)	
1.	Public Sector Saving	20.9	31.6
2.	Corporation Sector Saving	8.6	8.5
3.	Household Sector Saving	70.5	59.9
	Total	**100.0**	**100.0**

3.59 The contribution of autonomous public enterprises comprises their retained profits and depreciation. There has been considerable expansion of government investment in public sector undertakings since the beginning of the Second Five Year Plan. The return from many of these enterprises had been rising in recent years. Keeping this trend in view the saving of these enterprises is projected to increase from Rs. 1,396 crores in 1977-78 i.e. 1.7 per cent of GNP to Rs. 3,174 crores in 1982-83 i.e. 3.0 per cent of GNP.

*Excluding Own Account labour inputs. This concept is consistently used in this Chapter.

@@The corresponding ratios of net Savings including own account labour inputs to National Income is estimated to be Rs. 16.5 in 1977-78 and 20.5 in 1982-83.

Investment and Saving in the Private Sector

3.60 The aggregate saving of the private sector—corporate, cooperative and household units—is estimated as Rs. 71.438 crores. The resources available for investment in the private sector, however, are projected to be Rs. 46,860 crores.

Table 3.9 : Private Investment, 1978—83

Sl. No.	Sector	Investment
(0)	(1)	(2)
		(Rs. Crores)
1.	Own Saving	
	(i) Non-Financial Corporate Sector including Cooperatives	8,293
	(ii) Households	62,364
	(iii) Private Financial Institutions	781
	(iv) Total	71,438
2.	Net Transfers to other Sectors	24,578
3.	Total Resources Available for Investment in the Private Sector	46,860

3.61 This figure is exclusive of transfers from the public sector for investment in the private sector. These transfers would raise private sector investment.

Private Corporate Sector

3.62 The saving of the private corporate sector—financial and non-financial is estimated to be Rs. 9,074 crores in accordance with past trends and the assumed rate of growth of the economy. About 35 per cent of this saving would accrue as retained profits and the balance of 65 per cent as depreciation provision.

3.63 The contribution of these enterprises is anticipated to rise from Rs. 1,393 crores i.e. 1.7 per cent of GNP in 1977-78 to Rs. 2,118 crores i.e. 2.0 per cent of GNP in 1982-83.

Table 3.10 : Corporate Saving

Sl. No.	Head	Saving (Rs. crores)		Per cent to GNP	
		1977-78	1982-83	1977-78	1982-83
(0)	(1)	(2)	(3)	(4)	(5)
1.	Retained Profits	438	765	0.5	0.7
2.	Depreciation	955	1,353	1.2	1.3
	Total	1,393	2,118	1.7	2.0

Household Sector

3.64 The Household sector comprises individuals, non-government non-corporate enterprises in agriculture, trade and industry, and non-profit organisations like trusts, charitable institutions etc. The gross saving of this sector during a particular period materialises in the form of

(i) net addition to financial assets ; and

(ii) gross direct investment in physical assets.

The increment in financial assets comprises additions to currency, deposits with scheduled banks, cooperative institutions and non-banking companies, contributions to Provident Funds, the Life Fund of the L.I.C. etc. The net increase in the financial assets of households during the period 1978--83 is estimated to be Rs. 34,119 crores as follows :

Table 3.11 : Net Increase in Financial Assets (Households) 1978—83

Sl. No.	Head	Amount
(0)	(1)	(2)
		(Rs. Crores)
1.	**Deposits**	**24,921**
	(i) Scheduled Banks	22,584
	(ii) Cooperatives	1,837
	(iii) Non-Banking Companies	500
2.	Currency	1,911
3.	Life Insurance Corporation—Life Fund	4,114
4.	**Provident Funds**	**9,079**
	(i) Employees Provident Fund	4,786
	(ii) State Provident Funds	2,953
	(iii) Others	1,340
5.	Private Corporate and Cooperative Shares and Debentures including Units	1,026
6.	Government obligations—Small Savings, Debts, Deposits and Miscellaneous items	1,740
7.	Total increase in Gross Financial Assets	42,791
8.	Less increase in Financial Liabilities	(—)8,672
9.	Net Increase in Financial Assets	34,119

3.65 The estimates of increases in various types of financial assets and liabilities have been worked out on the basis of latest data available and trends observed in the past.

3.66 Deposits of the scheduled banks constitute the single most important item in households financial assets. Since the nationalisation of major banks in 1969-70, deposits have recorded a spectacular growth.

Table 3.12 : Growth of Scheduled Bank Deposits* 1969-70/1977-78

Sl. No.	Head	Annual Growth Rate
(0)	(1)	(2)
1.	Demand Deposits	18 per cent
2.	Time Deposits	21 per cent
3.	Aggregate Deposits	19.8 per cent

Making allowance for abnormal growth in some years associated with very high inflation rates in the past, demand and time deposits of the scheduled banks have been projected to grow over the next five years (1978--83) at the rate of 15 per cent and 20 per cent per annum respectively. The total increase on this basis is expected to be Rs. 28,953 crores. Assuming the share of the household sector to be

*Including commercial and other scheduled banks' deposits.

78 per cent on the basis of the trend during the last 7 years, the increase in households deposits with banks will be Rs. 22584 crores during 1978-83.

3.67 The estimates of direct household investment in physical assets have been made on the basis of the proportion of such assets to national income in the past. The estimate for 1978-83 is Rs. 28245 crores.

BALANCE OF PAYMENTS

3.68 There has been a breakthrough in the foreign trade and balance of payments situation of the country during the last few years. This has led the economy from a highly constrained to a comfortable foreign resource position. The change has occurred in spite of sluggish growth of investment and output in recent years. In the changed situation, planning must aim at (a) the maintenance of real export growth at a reasonably high rate and (b) effective utilisation of the available exchange resources for accelerating the tempo of investment and growth in the economy. Keeping this in view, this section looks at the problems of maintaining export markets for the benefit of the economy and balancing foreign exchange availability with the economy's growing requirements.

Review 1974-78

Exports

3.69 In the Fifth Plan (1974-79) exports were projected to grow at the annual rate of 8.5 per cent in constant prices. But this target was exceeded and the growth of exports averaged 10 per cent a year in constant prices. In 1977-78 the growth is expected to be around 8 to 9 per cent.

3.70 The unit value index (1968-69=100) grew, from 146 in 1973-74 to 183 in 1974-75, 197 in 1975-76 and further to 210 in 1976-77. More than 25 per cent of the rise in overall unit value which India realised during 1974-75 was due to a significant rise in the unit value of sugar, groundnuts, tobacco, spices, tea, coffee, jute and cotton textiles, leather and cement, mainly as a result of the world commodity boom of 1973-74 and 1974-75. While unit values of fish and fish-products, cashew kernels, coffee, iron ore, leather and cement showed a significant further rise in the later years, that of cotton textiles declined. In general, unit value levelled off after 1974-75.

3.71 As a result of the increase in the quantum and unit value variation, earnings from exports rose from Rs. 2523.4 crores in 1973-74 to Rs. 5143.4 crores in 1976-77, recording a growth rate of 27 per cent per annum compound. This achievement is mainly due to substantial growth in the exports of sugar, iron and steel, fruits and vegetables and food products. (See Annexure V). Considerable growth was also recorded by engineering goods, leather and leather products, apparel, handloom cloth, chemicals and allied products, and various handicrafts, especially gems and jewellery. The export of silver has also been significant.

3.72 It is useful to recall the major factors responsible for recent export growth. First, the world commodity boom of 1974 contributed substantially to this growth by raising the unit value of Indian exports. In some years, the fact that the rate of inflation in India tended to be lower than in its major market countries, improved its competitive position. The partial floating of the rupee in 1975 also had a similar effect. Second, various measures were taken to stimulate the growth of export capacity/production and the export business itself. Export duties were changed in the case of certain agricultural commodities. Imports for export production were liberalised and subsidies related to export value were continued. In 1976, subsidy rates were fixed for three years ending March, 1979. Finally, in some sectors, the slow growth of domestic demand generated greater exportable surpluses.

3.73. A salutory feature of recent export experience is the diversification of Indian exports. The growth of engineering exports to the level of about Rs. 600 crores, which makes these exports the largest single item in the export basket, deserves special mention in this connection. This diversification not only signifies the emergence of India as a significant exporter of manufactured goods, but also proves that diversification helps maintain domestic capacity utilisation and employment in periods when overall domestic growth tends to be sluggish.

3.74 The export production performance of the sectors during 1973-74 to 1976-77 shows that growth of exports contributed substantially to the expansion of domestic productive capacity of certain sectors. In the case of engineering goods, during these years, 40 per cent of the increase in production is accounted for by the expansion of exports.

3.75 Market-wise, a significant part of the growth in exports during the period was contributed by the OPEC markets and the EEC. The share of the OPEC countries increased remarkably during the period 1973-74 to 1976-77 from 7.3 to 14.0 per cent. Among the Western developed countries, the share of EEC countries increased from 20.85 per cent in 1974-75 to 26.76 per cent in 1976-77. The share of the East European countries declined, from 20.57 per cent in 1974-75 to 15.44 per cent in 1976-77.

3.76 Due to the spectacular growth in exports, India's share in world exports improved over the review period. It was 0.50 per cent in 1973, declined to 0.47 per cent in 1974, picked upto 0.45 per cent in 1975 and further to 0.51 per cent in 1976. Excluding the exports of oil-exporting countries, India's percentage share in world exports which was 0.55 in 1973 improved to 0.59 in 1976.

Imports

3.77 Imports were projected to be Rs. 28524 crores in the Fifth Plan. POL, capital goods, steel and non-ferrous metals accounted for major shares. These projections were based on investment programmes aiming at import substitution in energy, metals, and fertilizers. Provision was also made for creating buffer stocks of critical wage goods like foodgrains, edible oils and cotton. Imports of machinery were expected to increase, in spite of increased availability from indigenous sources, in order to meet the needs of off-shore drilling, tele-communications, space and other technology-intensive sectors.

3.78 Actual imports turned out to be Rs. 4518.8 crores in 1974-75, Rs. 5256.2 crores in 1975-76 and Rs. 5074.4 crores in 1976-77. Table at Annexure VI shows the imports of major commodity groups in the review period. The increase in the value of imports during 1975-76 was due mainly to food, POL and machinery imports. The volume index of imports according to DCI&S came down from 100 in 1974-75 and 99 in 1975-76 to 97 in 1976-77. This decline in imports was essentially due to a market reduction in the imports of food and fertilizers. However, other imports (excluding POL) increased by 4.2 per cent in 1975-76 and 17.2 per cent in 1976-77.

3.79 The import unit value index (1968-69=100) rose sharply during the review period from 138 in 1973-74, to 239 in 1974-75 and 280 in 1975-76; it slipped to 278 in 1976-77. The sharpest rise during 1974-75 was primarily due to the POL price rise. Prices of other import items were responsible for rise of the index in later years. These included cotton, foodgrains, oils, and metals. The unit value index of machinery and equipment, a major item of India's imports, rose substantially over the period, from 115 in 1973-74 to 232 by 1976-77.

3.80 India's economy-wide terms of trade, as estimated from the unit value indices of imports and exports, showed substantial deterioration during 1973-74 and 1974-75. The index (1968-69=100) came down to 77 in 1974-75. It declined again during 1975-76 to 70. It improved somewhat during 1976-77 to 76. Commodity-wise, the terms of trade deterioration during 1973-74/1975-76 was primarily due to the POL price rise and deterioration in the terms of trade of machinery and equipment, chemicals, iron and steel (except 1974-75), raw cotton (except 1975-76), and oils.

Invisibles

3.81 The inflow of non-commodity export receipts over the past three years, popularly known as remittances from abroad, has been substantial. These remittances increased owing to factors like the firming up of rupee vis-a-vis the pound and, to some extent the dollar, various measures taken to reduce smuggling, facilities provided to non-resident Indians abroad, and migrants. These remittances have virtually produced a current account surplus. Invisibles are now an important source of foreign exchange inflow. The monthly level of inflow has more than doubled in the last three years.

3.82 Studies made in regard to private remittances, suggest that the spurt was higher in the case of small remittances. Large remittances were in the form of personal gifts and donations and repatriation of savings by Indian residents abroad. The share of remittances sent for family maintenance increased substantially. The major country sources of remittances were USA, Canada and the countries of the EEC and the OPEC. Remittances led, inter alia, to a sizeable improvements in the foreign exchange reserves. It is estimated to exceed Rs. 4000 crores by April, 1978.

Foreign Aid

3.83 The inflow of foreign aid began to show an upward trend since 1973-74, though the proportion of imports financed by gross external assistance remained the same in 1975-76 as in 1972-73. Table at Annexure VII shows the flow of foreign assistance (gross and net) during th period 1974-75 to 1977-78. The volume of net foreign aid averaged Rs. 1080 crores in the Fifth Plan projections. But in recent years the average has declined to about Rs. 860 crores. In 1975-76, however, the level was higher at Rs. 1154 crores. Gross aid declined in 1976-77 and is estimated to be around that level in 1977-78. Considering that total debt service payments are rising continuously, net aid is estimated to be lower in 1976-77 as well as in 1977-78.

Trade Policy and Projections : 1978-83

Imports

3.84 Import policy in the context of changed external payments position has to be selectively liberalised and so designed as to yield the most orderly and judicious use of foreign exchange reserves. The recent international developments such as protectionist policies and recession in the developed market economies coupled with domestic factors such as the need to restrict the exports of essential items of mass consumption, growing requirements of imported raw materials, components etc., make it essential to ensure that the accumulated reserves are utilised in the best possible manner. Appropriate changes in import policy and procedures will, therefore, have to be introduced to achieve the objectives of combating inflationary pressures, generating more employment, and boosting up investment and growth in the economy.

3.85 The main thrust of the new import policy should be on meeting the requirements of raw materials, components and spares required by priority industries and of those having focus on export promotion. The import needs of on-going projects and projects where capacity-utilisation is not reached for want of essential imports must also be met. Special emphasis has to be placed on items which contribute to raising the productive efficiency of industries through better utilisation of existing capacities, replacements, modernisation and technological improvements. Industrial licensing policy needs to be dovetailed with the new import policy so as to achieve the desired results in an effective and expeditious manner.

3.86 In a number of industries there is a need for reducing investment costs to make the products more competitive. This calls for suitable adjustment in tariff rates in respect of capital goods imports. Prima facie, the import duties could be reduced in cases where there is no indigenous production and where the production in the country in the near future is not considered to be likely or worthwhile. In view of scarcity of capital, cautious attitude in starting capital-intensive industries is necessary. Where the demand falls short of what an economically-sized plant will produce, it may be better to import and defer the start of a plant till demand picks up to the needed level. The pursuit of this policy in a systematic way

together with proper adjustment of import duties on various goods to this end, may also lead to a larger and profitable use of foreign exchange reserves. However, it is necessary to ensure that too much and sudden exposure, may not give a set-back to existing domestic industry, especially the small industrial units.

3.87 A well thought-out scheme for import of essential consumer goods is necessary for meeting unforeseen contingencies, stabilising domestic prices as well as for undertaking massive investment programmes. In this context, the building up of buffer stock of items of essential consumer goods, raw materials, non-ferrous metals, etc. through imports deserves special emphasis. It may be prudent to pay more regard to the need of conserving non-renewable resources through imports. Inessential consumer goods, on the other hand, should continue to be banned. There should also be a ban on the imports of items which adversely affect the growth of indigenous industries (especially small-scale industries) which are highly labour displacing or which are important from the view point of safety or strategic considerations or in case of which self-reliance is called for on pressing considerations or unreliability of world supply. The quota in the case of items for which international prices fluctuate widely needs to be determined on the basis of demand-supply gap and should be such as to provide some degree of price stability to the indigenous industry, e.g., in case of non-ferrous metals and various agricultural products. Imports of various items on the free licensing list need to be regulated by tariffs. The use of tariff mechanism will require continuous monitoring to guard against dumping and protecting domestic industry from unfair competition.

3.88 Import duties need not be imposed merely to bring about import-substitution. Very high import duties on items not indigenously produced may no doubt encourage import-substitution but the cost involved may be too high. In the present circumstances, the policy of import-substitution needs a relook, so as to give greater weight to domestic resource cost per unit of net foreign exchange saved.

3.89 The present policy in regard to import of technology also needs reorientation. There is need for continued inflow of technology in limited areas of sophisticated technology and high priority sectors where Indian skill and technology have not developed adequately. Since technological improvement is a continuous process, the initial technology imported has to be absorbed and adapted to suit the indigenous requirements and strengthened. Even where technology is imported primarily to meet export obligations, it may be ensured that it is absorbed ultimately so that exports take place on a continuous basis. Selective imports of technology on a competitive basis and its ultimate absorption in the economy coupled with indigenous efforts in developing appropriate technologies are the major steps in the direction of achieving technological self-reliance in the country.

3.90 In view of the above, import projections have been made on the following assumptions;

(i) the initial condition of comfortable foreign exchange reserves would permit a more liberal import policy during the medium-term Plan period;

(ii) the strategy of import substitution can now be made more flexible and reflect domestic resource cost considerations so that, on the margin, further growth of extremely inefficient import-substituting capacity may be slowed down;

(iii) sufficient provision is to be made for imports of essential consumption items to balance their demand and supply and prevent excessive price increases;

(iv) conservation considerations should be giver greater weight in the determination of trade policy relating to exhaustible resources;

(v) if one or two bad crop-years turn up during the next five years, some contingency agricultural imports may be necessary ;

(vi) the Minimum Needs Programme would increase the demand for paper, newsprint, cement and certain types of equipment;

(vii) to meet the special needs of oil exploration, telecommunications, shipping, etc., larger imports of machinery would be required, and certain types of technology may have to be imported;

(viii) some provision for imports of machinery and equipments is to be made in anticipation of capacity requirements beyond 1982-83; and

(ix) the domestic consumption of POL and fertilizers may rise at rates exceeding past trend rates.

3.91 Import projections thus worked out have been made consistent with domestic demand and output projections.

3.92 In addition to commodity imports, at 1976-77 prices, a contingency provision has been made in the balance of payments for a reserve to meet the cost of import price increases. It would be prudent to make such a provision in view of the past price trends which indicate that in major import areas, the terms of trade can deteriorate at the rate of 2 to 3 per cent a year.

3.93 Aggregate imports for the whole five year period 1978-83 are projected at Rs. 38715 crores (at 1976-77 prices). The estimated value of imports rises to Rs. 39146 crores including the provision to be kept on account of POL price rise effective from 1st January 1977 (See Annexure VIII). Adding contingency provisions for price increases (including POL), the import of technology and imports in anticipation of long-term capacity increases, the aggregate plan period imports would be Rs. 42823 crores.

3.94 A significant portion of commodity imports will be accounted for by machinery and equipment. They are estimated to be of the order of Rs. 8706 crores for the Plan period, including some imports of metal products. While import-substitution has already brought down the proportion of imported machinery and equipment in investment, provision has been made for rationalisation. Estimates of the imports of

metal products are based on exercises for particular varieties. The annual level of imports of machinery and equipment is projected to grow from Rs. 1232 crores in 1977-78 to Rs. 2151 crores by 1982-83 (at 1976-77 prices).

3.95. Imports of metals, ores and scrap are projected to be of the order of Rs. 2788 crores during the Plan period. India will continue to import certain varieties of steel, non-ferrous metals and ores to meet a part of its requirements.

3.96 Petroleum crude and petroleum products constitute another major sector of imports, valued Rs. 8342 crores at constant prices. Crude imports are estimated to be of the order of 17.65 million tonnes by 1982-83, compared to 14 million tonnes in 1977-78. In addition, imports of 3.17 million tonnes of petroleum products will be required.

3.97 Fertilizer requirements will rise substantially during the Plan period, in view of the emphasis laid on agricultural development. Taking into account feasible levels of production of nitrogenous and phosphatic fertilizers in the country, imports are expected to rise from Rs. 413 crores in 1977-78 to 710 crores by 1982-83.

3.98 For the first time imports of cement and coal are provided for in the Plan. Imports of chemicals will be mainly of the 'maintenance' nature. These are expected to be doubled over the Plan period and a part will go into export production. India is not very competitive in producing paper, paper board and newsprint. However, taking into account feasible domestic production and the requirements of the Minimum Needs Programme, the import value of the paper group may increase almost three times over the plan period, from Rs. 75 crores now to Rs. 220 crores in 1982-83. In view of the construction programmes to be undertaken during the Plan period, it is felt that the production of cement in the country may not be adequate to meet all the requirements. Therefore, provision has been made for imports worth Rs. 90 crores per annum. Provision has also been made for imports of coking coal worth Rs. 50 crores per annum.

3.99. A provision has been made for contingency imports of agricultural commodities if and when unexpected demand-supply gaps emerge.

Exports

3.100. Export policy will have to be consistent with the perspective of planned development. Requirements of exports will have to be dovetailed with the para meters of the process of growth, generation of employment and increasing supply of wage goods. The formulation of long-term export policies will have to be based on suitable supporting investment policies.

3.101. At present when the foreign exchange situation is easy, overriding consideration will have to be given to the needs of common man while exporting goods of essential mass consumption, e.g., oilseeds, pulses, tea, vegetables, etc. However, domestic consumption may have to be restrained in case of items required by the high income groups in order to fulfil export commitments or exploit international market opportunities. A well thought-out balance between domestic demand and the need for foreign exchange earnings will have to be struck.

3.102. Exports are mainly a function of production. In the long run exports can increase only if the rate of growth of the economy can generate and sustain exportable surpluses, after meeting the internal needs. Efforts will have to be made to inculcate cost and quality consciousness.

3.103. Traditional items continue to have considerable weightage in India's exports and even a marginal decline in these will cause substantial loss of foreign exchange. In case of traditional exports like jute manufactures, cotton piece-goods, tea and coffee, the basic problem is one of increasing productivity and diversifying the commodity-mix so that domestic value added is maximised.

3.104. Exports of labour-intensive products and items fetching higher net value added, such as precious and semi-precious stones, jewellery and various items of handicrafts, garments, electronics, etc., should be developed. Emphasis should be laid on increasing production for exports of non-traditional agriculture-based products like marine products, processed foods and forestry products. Programmes like those aiming at carpet weavers' training, further development of artisans' skills, improvement of marketing mechanisms and minimisation of the number of intermediaries should get priority. Greater geographical dispersal of export efforts would be necessary so that the benefits of export activity are more widely diffused.

3.105. Adequate attention would have to be paid to the diversification of commodity base by raising production and exports of dynamic sectors in which India has long-term comparative advantage, such as engineering goods, chemical products, garments, leather manufactures, handicrafts, marine products, etc. Further expansion of exports may be envisaged in areas where existing capacity in the economy is under-utilised and the expansion in investment and output is consistent with the Plan priorities. Diversification of markets in addition to diversification of commodities is equally important. There is a vast scope for tapping the West Asian markets and markets in the developing countries.

3.106. Efforts will have to be made to move increasingly towards exports of services and technology. The competitive strength of Indian technology and expert services has improved. Apart from materials and equipment, Indian expertise and manpower can also be made available in turnkey projects abroad.

3.107. Steps will have to be taken to provide to the exporters infrastructural support in terms of efficient and upto date international marketing and information system. Export Promotion Councils have to be made to play a more effective role.

3.108. Given the favourable balance of payments situation, it is advisable to regulate exports in a manner that would not create scarcity in domestic market and cause pressure on prices. In respect of items particularly of agricultural origin, it may be

necessary to limit exports to specified quantities. A measure of regulation of exports is also necessary to prevent excessive competition by Indian exporters and to bring about a degree of stability in unit value and export earnings. Exports of certain key materials may have to be regulated to ensure adequate availability at home while in certain other commodities ban on exports may be necessary in the larger interests of the country, e.g., strategic materials, essential consumer goods and intermediates as well as items based on non-renewable resources. It is, however, important that very careful consideration is given to the identification of items for export control and the list thereof is prepared on the basis of a long-term export plan.

3.109. Various incentives and facilities are provided to exporters. The important export promotion measures in vogue are cash compensatory support, import replenishment, supply of raw materials at international prices, drawback of customs and excise duties, credit facilities, etc. Provision of incentives and services for the promotion of exports is necessary in order to enable the exporters to overcome the inherent disadvantages as against their competitors in world markets. Multiplicity of incentives, however, especially cash assistance, apart from over-burdening the administrative machinery, puts a burden on the exchequer. It is, therefore, necessary to examine in depth the entire scheme of incentives and simplify and rationalise the same. It would be appropriate to carefully work out the costs and benefits of the existing framework of incentives.

3.110. Exports (at 1976-77 prices) are placed at Rs. 5.525 crores for the current year implying a rate of growth of 8.5 per cent during the year.

3.111. Table at Annexure IX shows the export projections, aggregate and commodity-wise for the Plan period. Aggregate exports for the Plan period are projected at the annual rate of 7.0 per cent in constant prices. This rate is lower than the rate recorded during 1974—77 i.e. 10 per cent. The reason for expecting a somewhat lower rate of growth is that larger exports of food items, sugar and steel may not be possible. Also exports of iron ore, jute goods, etc., may not grow much faster.

3.112. The "leading" export sectors will continue to be engineering goods, chemicals, leather and leather manufactures, handicrafts including jewellery, textiles including ready-made garments, and marine products ("leading" sector defined as sector whose share in the expansion of exports exceeds 5 per cent and whose export-production ratio is rising). About half of the projected export expansion during the Plan period is accounted for by these items.

3.113. Exports of iron ore are projected to grow at a slower pace than expected earlier, in view of some slack in the growth of demand from Japan, the principal customer. However, according to present plans, Kudremukh will add 3 million tonnes of exports by 1980-81, 5 million tonnes by 1981-82 and 7.5 million tonnes by 1982-83. These exports will be in the pelletised form and earn substantially higher unit value than lump and fine ore.

3.114. In the case of fish and fish preparations, some export-oriented investment has been made and more is scheduled. Exports of chemicals and allied products such as intermediate chemicals, drugs and pharmaceuticals, paints and varnishes, etc. are expected to increase as the present share of exports in their production is low.

3.115. Exports of iron and steel will mainly depend on the excess of production over domestic absorption. The material balance exercise suggests exports of the order of 0.75 million tonnes of pig iron and 1.5 million tonnes of steel by 1982-83. The coal exercise indicates an export of one million tonnes of coal by 1982-83.

3.116. Sugar exports of the order of 5 lakh tonnes may materialise by 1982-83 if the domestic surplus grows and the international price situation is favourable.

3.117. Estimates of the export of traditional items, namely, tea, coffee, tobacco, jute manufactures, oil cakes, and spices reflect the inelasticity of world demand for them. The growth projected in the case of tea and coffee assumes a change in the product-mix in favour of packet and instant/concentrated forms which fetch substantially higher unit values as compared to the bulk form. For example, in 1975-76 the unit value realised was Rs. 14 per kg. for packet tea and Rs. 40.60 per kg. for instant tea as compared with the overall average unit value of Rs. 11.2 per kg. In case of coffee, the unit value was Rs. 56.3 per kg. for extract/essence and concentrated coffee as compared with the overall average unit value of Rs. 11.2 per kg. Growth in total exports of tobacco (unmanufactured) depends on higher exports of FCV tobacco. The exports of jute manufactures (5 lakh tonnes) are projected to be Rs. 265 crores in 1982-83. The volume may be the same as at present but export earnings may increase due to the entry of new products developed recently. Exports of oil cakes are projected at 10 lakh tonnes in 1982-83 as compared with 17.3 lakh tonnes in 1976-77, in view of the expected development of animal husbandry and the consequent growth of domestic demand. Exports of cashew kernels are projected to rise only marginally due mainly to the constraint on the supply of raw nuts. Exports of spices are not expected to show any growth.

3.118. The trade projections imply that the estimated level of exports at Rs. 5143.4 crores in 1976-77 may rise to Rs. 7750 crores (at 1976-77 prices) by 1982-83 and the estimated level of imports at Rs. 5074.4 crores has been planned to increase to Rs. 10500 crores (including POL price rise and contingency provisions) by 1982-83. Thus, the present surplus on trade account should evolve to a deficit of Rs. 2750 crores in 1982-83.

Invisibles

3.119. Transactions in invisibles include receipts and payments on account of travel and tourism, transport, banking and insurance, investment income and various current transfers, official and private. The total net monthly inflow under all these headings went up from Rs. 10 crores in 1974-75 to Rs. 60 crores

in 1976-77. The monthly average may be more than Rs. 80 crores in 1977-78. This inflow is expected to continue at the present rate for at least 2-3 years. There may be some deceleration thereafter. On this assumption, current transfers, among invisibles, have been estimated to average about Rs. 400 crores a year in the next five years.

3.120. Net travel receipts are estimated to increase from Rs. 168 crores in 1975-76 to Rs. 450 crores in 1982-83. Net receipts on account of transportation are estimated to go up from Rs. 64 crores in 1975-76 to Rs. 85 crores by 1982-83.

Net Aid

3.121. Gross aid estimates work out as Rs. 8017 crores for the Plan period. Out of this, debt service payments are estimated at Rs. 2921 crores. Interest payments are estimated at Rs. 1510 crores. Thus, the estimate of net aid is at Rs. 3586 crores for the Plan period. The estimates are made in constant prices and take into account the recent IDA replenishment.

3.122. The above balance of payments projections imply that if reserves accumulate to Rs. 4000 crores by April, 1978, there may be a net withdrawal from them of the order of Rs. 1180 crores over the Plan period. (See Annexure X).

ANNEXURE I

Estimate of Yield over the Period 1974—79 from the Measures Adopted by the Centre and the States for Raising Additional Resources During 1974—78

	(Rs. Crores)
I. Taxes	**4,734**
Centre	
1. Direct Taxes	278
2. Excise Duty	3,340
3. Customs	271
4. Interest Tax	383
5. Inter-State Sales Tax	327
6. Other Taxes and Duties	135
States	**3,016**
1. Land Revenue	241
2. Agricultural Income-tax	6
3. State Excise	275
4. Stamps and Registration	195
5. Taxes on Motor Vehicles, Passengers and goods	283
6. Sales Tax	1,411
7. Entertainment Tax	140
8. Other Taxes and Duties	465[1]
II. Public Enterprises	
Centre	**3,127**
1. Railways	2,393
2. Posts and Telegraphs	734
States	**2,281**
1. State Electricity Boards	1,752
2. Road Transport Corporations	529
III. Non-tax Measures	
1. Forests	30
2. Irrigation	121
3. Other items	98[2]
Grand Total	13,407

[1]Includes Electricity Duty, Cesses and Purchases Tax on Sugarcane etc. It also includes an amount of Rs. 179 crores for which no break-up is available.

[2]Includes Royalty on Mines, Minerals, Crude Oil, etc.

ANNEXURE II

Estimated Saving and Investment 1978—83

S. No.	Head	1978—83
(0)	(1)	(2)
		(Rs. crores)
1.	**Public Savings**	**27444**
	(i) Budgetary	13148
	(ii) Public Enterprises	14296
2.	Private Corporate Savings Including Co-operatives	8293
3.	**Financial Institutions**	**2754**
	(i) R.B.I.	1750
	(ii) Nationalised Banks	223
	(iii) Private Financial Institutions	781
4.	**Household Savings**	**62364**
	(i) Financial Assets—Gross	42791
	(a) Increase in Currency	1911
	(b) Increase in Deposits	24921
	(i) Scheduled Banks	22584
	(ii) Cooperative Societies	1837
	(iii) Non-banking Companies	500
	(c) L.I.C. —Increase in Life Fund	4114
	(d) Provident Fund	9079
	(i) Centre and States	2953
	(ii) Employees Provident Fund	4786
	(iii) Others	1340
	(e) Corporate and Cooperative Shares & Debentures including Units.	1026
	(f) Small Savings, Debts, Deposits & Misc. Government Obligations	1740
	(ii) Less Financial Liabilities	—8672
	(iii) Financial Assets—Net	34119
	(iv) Physical Assets	28245
5.	**Aggregate Domestic Savings**	**10085**
6.	Inflow from the Rest of the World	5135
7.	**Total Resources Available for Investment**	105990

ANNEXURE III

Macro Economic Estimates of Disposable Income, Consumption, Saving and Investment 1977-78

Sl. No.	Head	Domestic Economy			Rest of the World	Total
		Public Sector	Private Sector Including Households	Total		
(0)	(1)	(2)	(3)	(4)	(5)	(6)
						(Rs. crores)
1.	GDP at Factor Cost	2447	70151	72598	127	72725
2.	Indirect Taxes Less Subsidies	8717	..	8717	..	8717
3.	GDP at Market Prices	11164	70151	81315	127	81442
4.	Inter-Sectoral Current Transfers	113	437	550	(—)550	..
5.	(i) Direct Taxes	2915	(—)2915	..	..	..
	(ii) Miscellaneous Govt. Receipts	216	(—)216	..	..	..
	(iii) Interest on National Debt	(—)1228	(+)1228	..	..	..
	(iv) Current Transfers from Govt. to Private Sector	1790	1790	..	..	..
	(v) Current Transfers from abroad	..	550	550	(—)550	..
5.	Disposable Income	11277	70588	81865	(—)423	81442
6.	Consumption	7915	57847	65762	..	65762
7.	Saving	3362	12741	16103	(—)423	15680
8.	Net Import of Goods and non-factor Services	..	..	..	(—)310	(—)310
9.	Investment	..	..	16103	(—)733	(—)15370

ANNEXURE IV

Macro Economic Estimates of Disposable Income, Consumption, Saving and Investment 1982-83

Sl. No.	Head	Domestic Economy			Rest of the World	Total
		Public Sector	Private Sector Including Households	Total		
(0)	(1)	(2)	(3)	(4)	(5)	(6)
						(Rs. crores)
1.	GDP at Factor Cost	3146	88196	91342	158	91500
2.	Indirect taxes Less Subsidies	15410	..	15410	..	15410
3.	GDP at Market Prices	18556	88196	106752	158	106910
4.	Inter-Sectoral Current Transfers	479	(—)179	300	(—)300	..
	(i) Direct Taxes	4472	(—)4472	..	..	..
	(ii) Miscellaneous Govt. Receipts	207	(—)207	..	..	..
	(iii) Interest on National Debt	(—)1750	(+)1750	..	..	..
	(iv) Current Transfers from Govt. to Private Sector	(—)2540	(+)2450	..	..	..
	(v) Current Transfers from Abroad	..	300	300	(—)300	..
5.	Disposable Income	19035	88017	107052	(—)142	106910
6.	Consumption	11147	70974	82121	..	82121
7.	Saving	7888	17043	24931	(—)142	24789
8.	Net Import of Goods and Non-factor Services	..	..	..	(+)753	753
9.	Investment			24931	611	25542

ANNEXURE V

Exports During the Fifth Plan Period, 1974-75 to 1976-77 (Actuals)

Sl. No.	Item/Group of items	1973-74	Fifth Plan years		
			1974-75	1975-76	1976-77
(0)	(1)	(2)	(3)	(4)	(5)
					(Rs. crores)
1.	Tea	146.0	228.1	236.9	292.9
2.	Coffee	46.0	51.4	66.7	114.1
3.	Tobacco	68.4	80.4	98.4	102.1
4.	Cashew kernels	74.4	118.2	96.1	106.0
5.	Processed food	31.0	45.0	62.6	94.5
6.	Groundnuts	35.8	25.6	62.9	65.2
7.	Oil cakes	178.2	96.0	96.5	223.8
8.	Vegetable oils	31.7	33.7	35.6	48.6
9.	Spices	55.1	61.4	71.5	72.9
10.	Sugar	42.7	339.0	472.3	148.1
11.	Fish and fish preparations	89.2	66.2	127.2	180.3
12.	Raw cotton	32.4	15.2	41.3	27.0
13.	Jute manufactures	227.5	296.8	250.9	200.8
14.	Processed mica	13.0	18.2	14.7	17.4
15.	Iron ore	132.9	160.4	213.9	238.5
16.	Coal and coke	15.3	20.4	37.0	32.7
17.	Leather & leather manufactures including footwear	185.5	165.2	222.8	292.3
18.	Cotton pieces goods-mill made	162.7	129.7	121.6	200.8
19.	Cotton piece goods-handloom	32.4	29.3	39.7	53.2
20.	Apparel, hoisery and manufactures	67.4	96.9	146.4	257.0
21.	Man-made fibre fabrics	28.3	18.4	15.4	28.9
22.	Coir and coir manufactures	15.3	17.9	19.0	24.0
23.	Iron and steel	26.2	21.1	68.2	283.0
24.	Engineering goods	201.7	356.6	413.0	554.4
25.	Chemicals & allied products	50.3	92.9	85.3	109.1
26.	Gems and jewellery	106.9	98.4	148.5	242.4
27.	Other handicrafts	66.7	88.2	103.5	160.0
28.	Sub-total 1 to 27	2163.0	2770.6	3367.9	4170.0
29.	Others[1]	360.4	558.2	674.9	811.0
30.	**Grand total 28+29**	**2523.4**	**3328.8**	**4042.8**	**4981.0**
					(5143.4)R

[1]Include exports of silver,

R—Revised

Source : DCI&S

ANNEXURE VI

Imports During the Fifth Plan Period, 1974-75 to 1976-77 (Actuals)

Sl. No.	Item/Group of items	1973-74	Fifth Plan years		
			1974-75	1975-76	1976-77
(0)	(1)	(2)	(3)	(4)	(5)
					(Rs. crores)
1.	Metals, ores and scrap	403.2	608.4	432.5	410.6
2.	Metal products, machinery and transport equipment	673.5	723.3	967.7	1007.8
3.	Petroleum crude, products and lubricants (POL)	560.3	1156.9	1225.7	1412.1
4.	Fertilizers and raw materials for fertilizers[1]	229.6	599.6	614.6	284.1
5.	Other non-foodgrain imports : of which	615.7	666.8	681.9	1022.0
	(a) Chemicals[2]	165.5	227.8	209.7	229.0
	(b) Textile fibres	92.8	67.1	73.0	203.4
	(c) Paper, paper board and newsprint	28.9	59.1	56.6	61.1
	(d) Vegetable oils & animal fats	64.9	34.9	17.0	118.0
	(e) Others	263.6	277.9	325.6	410.5
6.	Total non-foodgrain imports 1 to 5	2482.3	3755.0	3922.4	4136.6
7.	Foodgrains[3]	473.1	763.8	1342.8	878.6
8.	**Total 6+7**	**2955.4**	**4518.8**	**5265.2**	**5015.2**

(50/4.4)R

[1] Include fertilizers manufactured, urea containing more than 45% nitrogen, sulphur, phosphoric acid and rock phosphate.

[2] Exclude fertilizers manufactured, phosphoric acid and urea containing more than 45% nitrogen.

[3] Include cereal preparations.

R—Revised

Source : DCI&S

ANNEXURE VII

Inflow of Foreign Assistance Gross and Net : Fifth Plan Estimates, Actuals During 1974-75 to 1976-77 and Estimate for 1977-78

Sl. No.	Item	Fifth Plan estimates	1974-75	1975-76	1976-77	1977-78
(0)	(1)	(2)	(3)	(4)	(5)	(6)
						(Rs. corres)
1.	Gross disbursements : of which	9052	1314	1841	1599	1585
	(i) PL-480 food[1] and non-food	..	..	92	68	22
	(ii) Other food	..	162	97	48	32
	(iii) Other aid(loans and grants)	..	1152	1652	1483	1531
2.	Debt service payments	3645	626	687	755	842
	(i) Amortisation payments	2465	411	463	507	594
	(ii) Interest payments	1180	215	224	248	248
3.	Net inflow of assistance (1-2)	5407	688	1154	844	743

[1] Includes assistance by way of imports under rupee payment terms and under convertible currency credits.

NOTE : 1. Gross aid disbursement take into account debt relief which is inclusive of debt rescheduling/postponement ,etc. Debt service payments relate to those involving foreign exchange and through exports of goods.

2. Figures for 1973-74 include USSR wheat assistance and those of 1974-75 and 1975-76 include USSR wheat assistance, oil credits and assistance made available under United Nations Emergency Operations Scheme.

Source : Economy Survey, 1977-78

ANNEXURE VIII

Import Projections for the Plan : 1978-83 at 1976-77 Prices

Sl. No.	Item/Group of Items	Total 1978--83
(0)	(1)	(2)
		(Rs. crores)
1.	Metals, ores and scrap	2788
2.	Metal products, machinery and transport equipment	8706
3.	Petroleum crude, products and lubricants (POL)	8342
		(8773)
4.	Fertilizers and raw materials for fertilizers	2667
5.	Other non-foodgrain imports	13697
	(a) Chemicals	2070
	(b) Paper, paper board & newsprint	767
	(c) Cement	450
	(d) Coking coal	250
	(e) Others	10160
6.	Total non-foodgrain imports 1 to 5	36200
7.	Provision for contingency agricultural commodities imports	2515
8.	Total 6—7	38715
		(39146)

Figures in parentheses refer to the value of imports after including POL price increase effective from January, 1977

ANNEXURE IX

Export Projections for the Plan : 1978-83 at 1976-77 Prices

Sl. No.	Item/Group of items	Total 1978-83
(0)	(1)	(2)
		(Rs. crores)
1.	Tea	1512
2.	Coffee	770
3.	Tobacco	568
4.	Cashew kernels	595
5.	Processed food	615
6.	Groundnut	00
7.	Oil cakes	757
8.	Vegetable oils (castor oil)	122
9.	Spices	383
10.	Sugar	640
11.	Fish and fish preparations	1246
12.	Raw cotton	160
13.	Jute manufactures	1231
14.	Processed mica	109
15.	Iron ore	1782[1]
16.	Coal & coke	115
17.	Leather and leather manufactures including footwear	1895
18.	Cotton piece goods—mill made	1148
19.	Cotton piece goods—handloom	423
20.	Apparel, hosiery and manufactures	2181
21.	Man-made fibre fabrics	198
22.	Coir and coir manufactures	129
23.	Iron and steel	1100
24.	Engineering goods	4895
25.	Chemicals and allied products	970
26.	Gems and jewellery	1928
27.	Other handicarfts	1282
28.	Sub-total 1 to 27	26754
29.	Others	7246[2]
30.	GRAND TOTAL 28 + 29	**34000**

[1] Including Kudremukh exports.
[2] Includes exports of silver.

ANNEXURE X

Balance of Payments Projections for the Five Year Plan Period, 1978-79 to 1982-83

Account	Amount
(1)	(2)
	(Rs. crores)
A. Current Account	
1. Trade	
(i) Exports, f.o.b.	34,000
(ii) Imports, c.i.f.	(—)42823
(iii) Balance of trade	(—)8823
2. Services (net)	3460
3. Current transfers (net)	2015
4. Investment income (net)	(—)1787
(i) Debt services	(—)1510
(ii) Others	(—)277
5. **Total**	**(—)5135**
B. Capital Account	
1. Private and banking capital (net)	(—)490
2. Official capital (net)	(—)100
3. Debt services	(—)2921
4. Assistance to other countries	(—)350
5. Lags between export shipments and receipts	(—)200
6. External assistance (gross)	8017
7. Withdrawal of foreign exchange reserves	1179
8. **Total**	**5135**

Chapter 4

Employment and Manpower

The rate and pattern of growth realised in the last 27 years has enabled the country to become one of the major industrial countries of the world with a significant record of import substitution, technological development and export promotion. But these achievements have been overshadowed by the failure of achieved growth to reduce the unemployment problem. The awareness of this failure generated a new national commitment to make a determined effort in the next two Five Year Plans to eliminate unemployment. In the present Plan therefore, an attempt has been made to make radical changes in the pattern of investment and to initiate a technology policy which would stimulate labour absorption at a satisfactory rate.

4.2 This chapter presents in some detail the main features of the current employment situation, and the outlook for 1983 on the assumption that present trends continue. The employment situation of the educated, and of women, is separately discussed. The proposed policy shifts are described, and estimates of employment likely to be generated by the changed production pattern are presented.

4.3 For an assessment of trends it has been necessary to introduce some innovations in the treatment of available data. First, the labour force and work force figures of the 1971 Census, which were not comparable with the 1961 Census figures, have been revised so that they may be comparable. The size of the work force in each (three digit) sector has also been recomputed. Secondly, a new series of "recorded" employment has been generated on the basis of the best available figures of recorded employment from various sources. The "recorded" employment corresponds roughly to employment in the "organised" sector. Deducting the "recorded" employment from the total estimated work force in each sector, estimates of "unorganised" or "informal" employment have been derived. These estimates enable us to study the role of the informal sector in every division of activity.

4.4 Thirdly, on the basis of the parameters provided by the 27th Round of National Sample Survey, three estimates of unemployment have been generated and discussed :

(1) chronic unemployment (measured in numbers of persons),

(2) weekly unemployment (measured in numbers of persons), and

(3) unemployment including under-employment (measured in person-days or person-years).

Labour Force and Work Force

4.5 The labour force includes the active work force and chronic unemployment. For the Census year 1971 the labour force in India is estimated to have been 230.5 million.* Of this the work force was 226.9 million and chronic unemployment 3.6 million.[1]

4.6 Assuming the labour force participation rate to be the same as in 1972-73, the labour force in 1978 is expected to be 265.3 million, implying an annual addition to the labour force of the order of 5 million. Also, if the rate of chronic unemployment is assumed to be the same as in 1972-73, the number of the (chronic) unemployed persons in 1978 would be 4.4 million and the work force 260.9 million.

Unemployment

4.7 Chronic unemployment is, of course, a very small part of the Indian unemployment problem, because very few workers remain unemployed throughout the year. Millions of them find some work for some weeks or months and are forced into idleness in the rest of the year. Therefore, it is necessary to have some measures of irregular unemployment. One of these is "weekly unemployment"—the number of persons who did not find even an hour of work during the survey week, and are searching or available for work. The number of such persons was 10.1 million in 1973 and is estimated to be 11.2 million in 1978.

4.8 Even this estimate of weekly unemployment is unsatisfactory because millions of workers do not get regular work even for a whole week; they get some work on some days and are looking for work on other days even during the same week. Therefore unemployed *days* rather than unemployed *persons* should be counted. This person-day unemployment was 130.0 million days per week in 1973 which is equivalent to 18.6 million persons being unemployed on a typical day. Again assuming the person-day unemployment rate to be at least as much as in 1973, *unemployment in March 1978 should be 20.6 million person-years : 16.5 million in the rural areas and 4.1 million in the urban areas.* These are clearly the most inclusive and significant indicators of the magnitude of unemployment in 1978.

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*The figure was only 183.66 million according to original Census data and 200.60 million according to Census Resurvey. But these figures mainly included "main" or "primary" workers and left out millions of rural women workers. Therefore the Planning Commission has adjusted the census figures.

[1] Based on 1972-73 National Sample Survey rates.

4.9 The breakdown of the labour force, the work force, and chronic unemployment by sex and residence is shown in Table 4.1, and details of weekly and daily status unemployment are given in Table 4.2.

4.10 The unemployment *rate* in 1972-73 measured as the ratio of person-years unemployed to person-years available turns out to be 8.2 per cent in the rural areas and 9.0 per cent in the urban areas. Comparable rural rates, including open unemployment and underemployment are not available for other countries. But in recent country studies of the International Labour Organisation for the Philippines, Colombia and Sudan, rural rates of open unemployment of the order of 4.0, 2.9 and 6.7 per cent have been reported.[1] These rates are lower than the rural rate in India because they exclude under-employment. The urban rate in India is, however, comparable with the rates reported for other countries. The range of the urban unemployment rate in Asian countries in the late sixties was 3.5 to 14.8 per cent.[2] The Indian urban rate (9 per cent) is within this range. But the fact that some *rates* are internationally comparable is not very significant because in India the absolute volume of unemployment at present (20.6 million person-years) is staggeringly large, and larger than in any country in the world for which any unemployment statistics are available. This fact presents the greatest challenge to Indian planning in its next phase.

4.11 A Statewise review of the incidence of unemployment (Table 4.3) reveals that two-thirds (67 per cent) of total all-India unemployment is concentrated in 6 States : Tamil Nadu, Andhra Pradesh, Maharashtra, Bihar, Kerala and West Bengal. If Uttar Pradesh is added to the list nearly three-fourths (73.4 per cent) of all-India unemployment is accounted for. In the first six States the rate of unemployment is 10 per cent or more, with Kerala having the highest rate (25 per cent).

4.12 It is evident that employment-oriented policies need to be implemented with the greatest urgency in these 6 or 7 States.

Sectoral Employment

4.13 The distribution of the work force across the main industrial divisions in 1971 is shown in Table 4.4. Out of the total work force of 226.9 million, 167.3 million (or 74 per cent of the total) were still engaged in agriculture[3], 22.4 million (10 per cent) in mining and manufacturing, and the rest, 37.2 million (or 16 per cent) in tertiary activities.

4.14 It is a historically unique fact that over the last six decennial Censuses, in spite of impressive development of the large-scale manufacturing and infrastructure sectors, the share of agriculture in the work force has not diminished at all. It was 73 per cent in 1921, 73 percent again in 1961 and 73.8 per cent in 1971. The figure for 1971 is in fact slightly higher than for 1961. (Table 4.5). In almost all countries economic development is associated with a significant decrease in this share. Even during the decade 1965—75, the share declined in 13 Asian countries. (Table 4.6). But in India fairly rapid growth in the non-agricultural sectors in the last 25 years of planned development has completely failed to make any noticeable impact on the industrial distribution of the work force. The share of mining and manufacturing in the work force has stuck around 9 to 10 per cent and the share of the tertiary sectors around 16-18 per cent for five decades. The inference is clear : employment growth in these sectors has been insufficient to absorb an increasing proportion of the labour force. Investment and output have grown at a high rate but the production-mix and the technology-mix have been so capital-intensive that employment did not grow *pari passu*. Between 1961 and 1976, for example, in the modern factory sector, investment increased 139 per cent and output 161 per cent but employment increased only 71 per cent. Therefore, employment per unit of gross output decreased by 34 per cent and employment per unit of capital declined by 28 per cent.

Recorded or "Organised" Employment

4.15 Trends in non-agricultural employment in sizeable units (usually all public sector units and private units with more than 10 workers) can be discussed with some firmness because a significant part of non-agricultural employment is regularly recorded.* In fact employment in some activities is recorded by many agencies and their figures do not always agree. Therefore, a choice has to be made about the source to be used to get figures of recorded employment in particular activities.

4.16 Choosing the most appropriate source for recorded employment in each industrial division, it is found that recorded employment increased from 18.6 million to 22.5 million during the seven years 1967 to 1974. (Table 4.7). Thus the annual average growth in recorded employment in recent years has been only about 550,000. This means that recorded employment in the organised sector (including all plantations, mines, manufacturing, utilities, public ser-

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[1] Sharing in Development—A Programme of Employment, Equity and Growth for the Philippines, ILO, 1974.
Towards Full Employment—Report of the Inter-Agency Team of the ILO (1973).
Growth, Employment and Equity—A Comprehensive Strategy for the Sudan—Report of the ILO-UNDP Employment Mission. (1976)

[2] David Turnham, The Employment Problem in Less Developed Countries—A Review of Evidence, OECD Publications, Paris, (1971).

[3] Defined to include all primary activity—crop production, fishery, forestry and animal husbandry.

*Under the Factories Act, the Mines Act, the Plantation Labour Act, Motor Workers' Act, Shops and Commercial Establishments Act, Weekly Holidays Act and under the Employment Market Information Programme, the Annual Survey of Industries, and the routine reporting system of Government agencies such as the Railway Board, the Department of Posts & Telegraphs, etc.

vices and all reporting units in trade and transport) absorbs just about 11 per cent of the current annual increase in the labour force, the remaining 89 per cent of the annual increase in the labour force of about 4.45 million young workers are forced to hang on, for some livelihood, either on agriculture or some other small-unit activity (in units with less than 10 workers).

4.17 The rate of labour absorption in the whole organised sector is so small that even if this absorption is miraculously doubled by a phenomenal growth in large-scale industry and public services, it would still employ not more than 20 per cent of the annual increase in our labour force. Therefore, the only hope of absorbing most of the annual increase in our labour force lies in making employment in small units fuller and more productive, and in choosing a product-mix and technology-mix, even in the organised sector, which absorbs substantially more labour per unit of output and investment.

Informal or Unorganised Employment

4.18. The dynamics of "employment" in agriculture and allied activities, and in the entire small-unit sector, cannot be discussed in depth because "employment" in these sectors means nothing more than dependence on a variety of agricultural and non-agricultural small-scale activities for some livelihood. This "employment" includes all levels of work intensity in terms of the time for which productive work is done per month or per year. It also includes employment at all levels of income associated with destitution at one end and the affluence of the large farmers on the other. Thus employment in agriculture and small unit activity is not associated with any particular work duration or regular income. We can only note the changes in the work force in these activities in the so-called "unorganised" sector. These changes are reflected in the figures given in Table 4.8.

4.19. It will be seen that in 1971, 207 out of 227 million workers, or 91 per cent of the total work force, were engaged in the unorganised sector. Within the unorganised sector some significant shifts have been occurring in the employment pattern. First, the number of landless agricultural workers increased by about 19 million during the decade 1961—71. The share of landless workers in the total unorganised work force increased from 18 per cent to 24 per cent. This fact reflects several tendencies which should cause concern, namely, growing population pressure in the rural areas, lack of opportunities for non-agricultural work, and the proletarianisation of small farmers, artisans and women workers, as a result of eviction and/or technological displacement. Since the landless agricultural labour population bears the largest incidence of rural poverty and unemployment an increase in its size reflects the correlated increase in poverty and unemployment.

4.20. The second noteworthy feature of the distribution of the unorganised work force is the decrease in the share of manufacturing. This decrease again signifies relative displacement of labour in the cottage and small-scale industries. The share of the service sectors also appears to have declined slightly from about 7.6 per cent to 6.4 per cent of the unorganised work force. The net outcome of these shifts is that the overall share of agriculture even in the unorganised work force not only did not decrease but increased by about 2 percentage points from about 78.6 per cent to 80.4 per cent.

4.21. A third characteristic of the unorganised work force is the preponderance of self-employment. The National Sample Survey data for 1972-73 show that about 61 per cent of the total work force and 67 per cent of the unorganised work force is self-employed in farm and non-farm enterprises as owners or unpaid helpers.

4.22. The pervasive importance of the unorganised sector in the employment profile is brought out in Table 4.9 which shows that the unorganised sector accounts for 99 per cent of the work force in agriculture, 78 per cent in manufacturing, 34 per cent in mining, 58 per cent in construction, 70 per cent in trade, 46 per cent in transport and 67 per cent in services.

The Overall Picture : Recent Trends

4.23. Table 4.10 summarises the distribution of the total labour force in India into :

(i) Chronic Unemployment ;

(ii) Agricultural Work Force ; and

(iii) Non-Agricultural Work force in

(a) Recorded Employment, and in

(b) Other Informal Activity.

4.24. This Table reveals that during the seven years 1971 to 1978 the labour force increased by 35 million, of which 25 million workers were "absorbed" in agriculture itself. Non-agricultural activities absorbed only 9 million, about half in the organised sector and half in the informal sector. Thus the total agricultural and informal sector labour absorption accounted for nearly 29 million out of the total labour force increase of 35 million. The organised sector absorbed only 4.6 million. The rest, about 3/4 million workers, were added to the pool of the chronically unemployed. These trends for the last seven years confirm the general tendency of manpower flows in India : only a small fraction of labour force increases (about 10 to 11 per cent) is able to enter the organised sector. The rest, about 90 per cent, drift either into informal activity, characterised by under-employment or absolute chronic unemployment.

The Scenario in 1983 with Present Trends Continuing

4.25. It is instructive to project the employment situation in 1983 on the assumption that present trends will continue. Projections show that the labour force is likely to increase to 294.8 million in 1983. This means that 29.5 million persons will enter the labour force in the next five years, and the annual addition to the labour force, which was roughly 4 million a year during the decade 1961—71 and 5 million a year during the last seven years, will escalate to 5.9 or nearly 6 million a year in the next five years.

4.26. If the rate of growth of industrial production continues to be only 5 per cent, as at present, the organised sector will absorb only about 2.7 million of the 29.5 million new workers. The rest (about 27 million) will stay on in agriculture (about 21 million) or move into some partial employment in the informal sector (about 5 million) or become chronically unemployed (about half a million). The full figures are shown in Table 4.11.

4.27. The sobering fact is that even if the rate of industrial growth increases to 7 per cent, the extra absorption in the whole organised sector will be only 0.26 million, so that the overall profile of the remaining labour force will remain unaffected.

4.28. The distribution of this labour force across sectors is also not likely to change significantly if present production and employment trends continue. But after new policies have succeeded in stepping up growth in rural areas and in small-unit manufacturing and related tertiary activities, the distribution may begin to change. It has to be appreciated that given work force of about 265 million now and 295 million after five years, a shift of even 1 per cent of the force from one industrial division to another would require that employment in the growing sector should increase by 2.5 to 3 million; and this order of employment growth is achievable only if policies promoting very high growth in labour-intensive sectors are persistently pursued for 5 to 10 years.

4.29. Though a drastic shift in the distribution of the work force away from agriculture is normal and desirable, it is not likely to materialise in India in the near future.

4.30. The projection of unemployment in Table 11 only covers chronic unemployment. But if we assume that weekly and personday unemployment rates remain at the 1972-73 levels, the total volume of unemployment of these types can also be projected. The assumption of 1972-73 unemployment rates continuing is not unjustified because the average rate of growth of the economy has been relatively low during the last five years, and all the surface indicators of unemployment—such as employment exchange registrations—have continued to increase. Therefore, if current trends are assumed to continue, unemployment rates observed five years ago, would not overestimate the likely unemployment even in 1983. If we use these rates we get a weekly unemployment projection of the order of 12.5 million and a personday unemployment estimate equivalent to 22.9 million person years in 1983 (Table 4.2).

4.31. All these portents merely underscore the absolute need to adopt employment-oriented policies. In the peculiar Indian demographic situation, the more continuance of conventional industrialisation, except in selected sectors, would continue to widen the employment gap indefinitely. This gap can only be closed by decisive State action to ensure that output growth is associated with correspondingly high employment growth. Since the rate of growth of the labour force is about 2 per cent a year, labour absorption must increase steadily at the rate of about 3 per cent a year, if new entrants are to be employed and the present backlog of unemployment (about 8 per cent of the labour force in person-years) is to be absorbed over a ten-year period.

Employment Situation and Outlook—Educated Manpower

4.32. So far we have discussed overall manpower balances. But manpower balances of the educated labour force require separate attention. Therefore, in Table 4.12 the total present population and the projected population in 1983 are classified into educational categories.

4.33. The literacy rate is expected to have increased to 35 per cent in the current year. In recent years it has been rising by 1 percentage point every year. Depending on whether it rises by 1.5 percentage points or 3 percentage points annually in the next five years, the literate population will increase by 74 million on the low side and 127 million as a maximum. If we assume that the increase in the literate population will be only 74 million, 59 million of this total will be non-matriculates, 12 million matriculates and 3 million graduates (including diploma holders).

4.34. The available statistics do not permit a similar classification of the labour force into educational categories. But if the entire matriculate and post-matriculate population is deemed to be in the labour force, this segment of the labour force is likely to increase by 15 million—from 37 million (in 1978) to 52 million (in 1983). The employment/unemployment profile of this segment cannot be projected with the available information.

4.35. However, a detailed analysis of the graduate labour force is possible. This is attempted in Table 4.13 on the basis of available manpower studies. The stock of graduates is likely to increase from 68 lakh to 95 lakh or by 27 lakh, in the next five years. The current unemployment rate among graduates is about 10 per cent. If present trends continue this rate is likely to increase to 15 per cent. This means that the number of unemployed graduates will be nearly doubled from 7 lakh to 14 lakh.

4.36. General arts, science and commerce graduates account for about 6 out of 7 lakh of unemployed graduates at present and they will account for more than 12 out of 14 lakh unemployed graduates in 1983. These figures highlight the well-known fact that the core of the graduate unemployment problem is the growing pool of general arts, science and commerce graduates. These categories of graduates and diploma holding engineers suffer from the highest rates of unemployment (11 to 19 per cent). Among specialized graduates such as engineers, agricultural graduates, medical graduates and post-graduates the unemployment rates are relatively lower (2 to 6 per cent). In the case of commerce post-graduates the current unemployment rate about 3 per cent but it may rise to the high level of 11 per cent by 1983. The category of veterinary graduates is the only one for which current figures as well as projections show a growing shortage.

4.37. In summary, the outlook for the graduate labour market is that the educational system would

be pouring into it about 5.37 lakh graduates every year; and the organised sector may annually absorb only 3.91 lakh of them, so that about 1.5 lakh of graduates would be added every year to the present stock of the unemployed. This grim outlook emphasises the urgent necessity for overhauling the educational system in order to reduce the excessive outturn of graduates and for adjusting employment policies in order to increase graduate absorption.

4.38. The situation is even grimmer in the matriculate labour market where about a crore or more youth may enter, looking for work or higher education.

The Employment Situation and Outlook—Women

4.39. The employment situation confronting women also requires separate discussion. The nation is committed to a steady improvement in the status of women, and one of the most important means of achieving it is to secure for them a fair share of employment opportunities. Recent empirical studies show that just as *laissez-faire* in the labour market has discriminated over a long period against scheduled castes, scheduled tribes and other weak sections of the population, it has also discriminated against women in certain parts of the country. They have lost traditional occupations as a result of changes which have transferred productive activity from homes and cottages to factories and machines. Conscious and unconscious biases of employers operate against their recruitment in various occupations. The power structure in traditional families and communities prevents them from seeking and obtaining adequate education and outside employment, and thereby securing an independent income and status. Therefore, special consideration of trends in female economic activity, and of feasible policies to stimulate the growth of women's employment are absolutely necessary.

4.40. The work force participation rate of women had been falling steadily over a long period. It declined from 33.7 per cent in the Census of 1911 to 23.3 per cent in the Census of 1951. In the Census of 1961 it turned out to be higher (28 per cent) owing to more inclusive definition of workers. (Table 4.14). The Census of 1971 grossly under-estimated the number of women workers, because of its emphasis on counting "main" or primary workers. If this Census is believed, while the female population increased by 51 million during 1961-71, the female work force declined by 26 million—from 59.5 million to 33.6 million. And the participation rate declined from about 28 per cent to a mere 12.7 per cent. In view of the utter unacceptability of these figures, the Planning Commission has developed adjusted estimates of the work force in 1971 showing that the female work force increased by 15.09 million during the decade 1961-71, and the participation rate remained roughly the same (about 28 per cent) as in 1961.

4.41. Thus, whatever may have been the trends in the past, there is no basis for the view that the overall female participation has been declining since 1961. In ten independent labour force surveys of the National Sample Survey between 1959 and 1973 the female participation rate recorded no significant trend, and in recent surveys it has stuck to about 28 per cent.

4.42. Projections show that since 1971 the female work force has increased by about 11 million to the present level of 86 million and by 1983 another 9 million women workers may enter the work force. (Table 4.14).

4.43. Chronic unemployment of women is currently estimated to be about 9 lakh, and if present trends continue, it may grow to 1 million by 1983. (Table 4.15). But, as in the case of males, chronic unemployment is an unimportant part of the total female unemployment problem. In fact, the 27th Round of the National Sample Survey revealed that the chronic unemploment rate for females was lower than the rate for males. But the weekly and personday unemployment rates for women (5.9 and 11.4 per cent respectively) were much higher than for men (3.6 and 7.1 per cent).

4.44. The higher rate of unemployment among women has resulted in the disturbing fact that nearly 40 per cent of total unemployment today (8.1 million personyears out of 20.6 million personyears) is accounted for by women. Their share in unemployment (about 40 per cent) is thus higher than their share in the labour force (about 33 per cent).

4.45. In the face of this evidence it must be concluded that the labour market, as it is operating, is not neutral as between men and women.

4.46. A study of the growth of the female work force between 1961 and 1971 shows that in a number of modern urban industries the number of women workers increased six to ten times, as in mining, the manufacture of machinery, electrical appliances and medical and scientific instruments, and in trade and banking.

4.47. But in the same decade the female work force suffered a serious decline in some sectors such as horticulture, livestock breeding, food processing, dairy products and jute textiles.

4.48. On the whole, between 1961 and 1971, the employment of women increased substantially in 115 out of 271 (3 digit) sectors but it declined in 63 sectors.

4.49. More recent data, available only for the organised sector show that, though the share of women in total employment is, low, it has been creeping up in recent years. It increased from 11 per cent in 1971 to 12 per cent in 1977. (Table 4.16).

4.50. An important aspect of the analysis of the female employment situation is the identification of industries or activities outside agriculture in which women workers have a high share of total employment. An analysis of the 1971 adjusted work force data given in Table 4.17 shows that in about 23 non-farm sectors women workers constitute half or more of the total work force. Eleven of the most important of these include food processing activities such as grain milling, oil crushing and the manufacture of dairy products, the spinning and weaving of textiles, domestic, laundry and sanitation services, the manufacture of bidi and coir products, and work in tea plantations.

4.51. To sum up, the main features of the female employment situation, the female participation rate is not declining, and though the share of women in the organised sector has increased to some extent, they suffer from a higher incidence of weekly and person-day unemployment than males. In addition to the present unemployment of females of the order of 8.14 million personyears, about 9 million women workers are likely to enter the labour force in the next five years. Measures will have to be taken to expand employment opportunities for women, by stimulating the growth of industries and occupations in which women usually have a substantial share in employment and others for which they may be prepared and assisted by special programmes.

Overall Employment Policy

4.52. An employment policy for the kind of situation described above must have three basic ingredients: (1) a policy to maintain the highest feasible rate of growth ; (2) a policy to make the pattern of production more labour-intensive ; and (3) a policy to regulate technological change so that the rate of growth of employment is maintained at a satisfactory level.

4.53. In preparing the Plan for the period 1978—83, the Planning Commission has tried to give concrete content to each of these policies.

4.54. The choice of the growth rate—an average of 4.7 per cent per annum—has already been discussed. This is the rate of growth which is not considered feasible given the available resources and constraints. This rate is higher than the average of 3.5 per cent recorded for a long period in the past.

4.55. The modest growth rate of 3.5 per cent has been associated with a very low rate of growth of employment. In the organised sector, for example, the rate of growth of employment has been about half of the rate of growth of production. Thus when large-scale industry grows at the rate of 5 per cent, recorded employment only grows 2.5 per cent a year. But since recorded employment is only 9 per cent of the total labour force, industrial growth of the order of 5 per cent absorbs in the organised sector only 0.225 per cent of the national labour force. The rest of the labour force stays in the informal sectors. In the next five years the rate of growth of large-scale industry is expected to be 6 to 7 per cent a year. Therefore, employment in the organised sector may grow 3 to 3.5 per cent a year. But this growth will annually absorb only 0.3 per cent of the labour force. Therefore, the solution of the employment problem will have to be sought in increasing income and employment in agriculture and allied activities and in small-scale manufacturing and service sectors.

4.56 In other words, in addition to achieving the highest feasible rate of growth, it is important to improve the pattern of growth. The Planning Commission has explicitly determined production targets for the next five years for the different sectors, keeping in view the need to increase employment generation. The basic requirement for increasing labour absorption is that the pattern of demand itself should change in a more labour-intensive direction. So far as private consumer demand is concerned, Planning Commission calculations show that with the existing income distribution, every million rupees of consumption transferred from the non-poor to the poor will generate 20.2 addition personyears of employment. The consumption of nonpoor requires 217.6 personyears of labour per million rupees spent, but the consumption of the poor requires 237.8 personyears per million rupees spent by them. Therefore, the most important way in which the Government can influence private demand in the right direction is to pursue policies which inject massive purchasing power among the poverty groups. To this end, the Planning Commission is recommending a number of specific policy measures. A massive irrigation programme is proposed, with a higher component of minor irrigation, because irrigation can shift income to the rural poor by increasing the productivity of small farmers and by increasing the demand for hired as well as family labour. The need to accelerate land reform is emphasised and the distribution of all farm inputs is intended to be steered more and more in favour of small farms because they absorb more labour per hectare. The supply of essential goods through the public distribution system at reasonable prices is also calculated to increase the real income of low-income households. If these policies are pursued, the ensuing redistribution of private purchasing power should increase the demand for labour-intensive goods.

4.57 Apart from influencing private demand, the Government can also re-shape its own investments and expenditures so as to increase labour absorption. The demand for infrastructure services such as road construction, water supply and social services such as health and education, is not constranied by private purchasing power, because all these are provided almost entirely by the public sector. The construction component of the expansion of these services is very high. This component can create enormous revolving employment. Indirectly the expansion of services also creates a large volume of permanent employment. Thus the construction of roads increases permanent employment in the private transport sector by expanding markets. The extension of electricity stimulates the power pumping of irrigation water in villages and small-scale industrial activity in towns, and thereby creates additional indirect employment.

4.58 In view of these considerations, a substantial proportion of public investment resources is being allocated in the next Plan for the expansion of the infrastructure and social services, particularly in the rural areas. The Revised Minimum Needs Programme alone, covering elementary education, adult education, rural health, rural water supply, rural road construction, rural electrification and housing for rural landless labour households, is expected to create 160 days of employment for about 1 million workers during the next ten years.

4.59 Thus by redirecting private demand through the redistribution of purchasing power, and public demand through a greater expansion of public services, the employment-content of the structure of production is sought to be increased.

4.60. In the field of technology policy the science and technology research system is being induced to

earmark a higher proportion of its capacity for the identification and discovery of appropriate techniques which increase productivity without excessive labour displacement in rural and small scale urban activities. But the research system will yield results only after some time-lag. For the immediate future, therefore, the Commission decided to study the economics of alternative techniques in a few sectors in which two or more levels of technology already co-exist and a technology policy needs to be established. Most of the sectors in which large numbers are employed, and a serious problem of the choice of technology exists, are consumer goods sectors. So the sectors selected for study include food processing, edible oil crushing, sugar, textiles, leather, wood-work, ceramics, particularly building materials) and light metal fabrication. The Commission has completed studies on two of these sectors (sugar and textiles). The results of these exercises have been kept in view in recommending policies for these sectors, including capacity reservations, in the Chapter on industrial policy. Recommendations will be made for other sectors on the basis of similar studies in the coming years.

4.61. One of the criteria adopted is that a consumer goods sector, defined to include all subsectors at different levels of technology, should record an employment growth rate which is higher than its output growth rate. If there is no technological change employment in the sector would grow at the same rate as output. But if we want greater labour absorption, employment must be programmed to grow at a faster rate than output.

4.62. The country should also aim at saving capital which is in short supply. Therefore for allocating new capacity in a problem sector, an additional criterion specified is that the investment required should be between the investment required for the most capital-intensive technique and that required for the least capital-intensive technique.

4.63 With these two policy assumptions, if programming is used to minimise the cost of producing the target output, the allocation of new capacity is objectively determined. A policy of reservation or differential excise protection is likely to raise the product price for the consumer to a small extent but if the gain in employment and saving of capital is sufficiently large, the policy of protection may be considered justified. In some cases, it appears that successful technological research, focussed on particular aspects of existing small-scale technology, can eliminate its cost disadvantage altogether; and it may not need any protection.

4.64. The Annex of this Chapter summarises the results of the sugar sector study. It illustrates the methodology adopted.

4.65 To sum up, the Commission has built into the recommended investment pattern the following features to accelerate the growth of employment.

(i) An overall growth rate of 4.7 per cent is planned.

(ii) An accelerated implementation of land reform, differential input supply policy favouring small farmers, the minimum needs programme and the public distribution system are expected to redistribute purchasing power and hence to increase the demand for labour-intensive goods.

(iii) Public investment in rural infrastructure and social services has been substantially escalated to increae construction employment as well as indirect permanent employment.

(iv) In selected mass employment consumer goods sectors, an optimum allocation of new capacity between different techniques will be recommended so as to ensure that the growth of employment in each of these sectors is satisfactory.

4.66 In spite of severe data limitations an attempt has been made to calculate approximate employment (in adjusted standard personyears) in each of the 89 sectors of the economy in the base year 1977-78 and the year 1982-83. The results are summarised in the following Table and the details are given in Table 4.18.

Projected Growth of Employment 1977-78/1982-83

Sl. No.	Sector	Employment*		Increase	Annual Growth	Annual Growth of Value Added
		1977-78	1982-83			
0	1	2	3	4	5	6
		(Million Personyears)			(Per cent)	
1.	Agriculture and Allied Sectors .	99.21	121.98	22.77	4.22	2.76
2.	Mining . .	0.90	1.35	0.45	8.45	9.07
3.	Manufacturing	22.74	31.65	8.91	6.83	4.67
4.	Others (Including Services) .	44.22	61.35	17.13	6.77	6.52
	Total . .	**167.07**	**216.33**	**49.26**	**5.30**	**4.70**

*In adjusted standard personyears.

4.67 If the planned pattern of investment and production materialises it is likely to create 49.3 million additional personyears of employment. Of this 22.8 million will be in agriculture and allied sectors as a result of the planned growth in irrigation capacity (17 million hectares) and in the animal husbandry, fishery and forestry sectors. New labour absorption in mining and manufacturing may be about 9.4 million personyears on account of the high rate of growth projected, particularly in the small industry sector. And the big power programmes, the construction component of the whole plan and the planned expansion of the infrastructure and social services, particularly in the rural areas may absorb about 17.1 million personyears in other sectors including Services. The labour-intensity of the whole structure of production is projected to increase so that while gross domestic product grows 4.7 per cent employment should grow 5.3 per cent a year.

Capital intensity refers to the ratio of investment to output and not the capital-labour ratio.

4.68 An important project in the animal husbandry sector will be the Dairy Operation Flood II which is expected to create 367,000 personyears of additional employment by 1982-83 and 3.95 million personyears of additional employment by 1987-88.

4.69 The village and small-scale industries programme, for which the allocation is being increased by nearly three times, is calculated to create 6.8 million personyears of additional full-time employment (3 million in small-scale industries, 0.3 million in powerlooms, and 3.5 million in handloom). It will also create part-time employment for 6.27 million including 4.89 million in khadi and village industries, 0.58 million in handicrafts and 0.8 millon in sericulture.

4.70 The total employment calculated for 1977-78 and 1982-83 (167 and 216 million respectively) is measured in standard personyears of 9 months (or 273 days of 8 hours) per year. These figures cannot be compared to the labour force projections without converting the labour forces also into standard personyears on some assumptions. Excluding children below 15 years and assuming that one female worker equals half a standard personyears, we get adjusted labour force estimates shown in the following Table :

Employment and Adjusted Labour Force & Employment in Standard Personyears 1977-78/1982-83

Sl. No.	Head	1977-78	1982-83
(0)	(1)	(2)	(3)
1.	Adjusted Labour Force (Million) .	207.8	231.8
2.	Expected Employment (Million Standard Personyears)	167.1	216.3
3.	Employment Gap (Million Standard Personyears)	40.7	15.5

When the adjusted labour force is compared with employment (in standard personyears) it appears that the employment gap should fall from about 41 million to 15.5 million standard personyears. In other words the proposed pattern of investment and production should reduce the employment gap* by more than half.

4.71 In addition to production or sector planning, it is proposed that employment opportunities be further increased by means of the preparation and implementation of local full employment plans in 2,000 out of 5,000 blocks in the country in the next five years. Area-oriented schemes, with an allocation of Rs. 2800 crores (including the Hills and Tribal Area allocation) for five years are to be launched for the purpose.

Policy for the Educated Unemployed

4.72. As indicated earlier the problem of educated unemployment has to be attacked on the supply side as well as the demand side.

4.73 On the demand side, the absorption of graduates is generally related to the development of the organised sector. Therefore if the projected rate of industrial growth of the order of 6 to 7 per cent per annum (as compared to an average 5 per cent in the last few years) materialises over the next five years, graduate employment should increase significantly.

4.74 Given the present trends, the projection of additional employment in the next five years is of the order of 19.5 lakh. If the rate of growth in the organised sector improves this may increase to 21 lakh. But the stock of the unemployed may still grow to 5 lakh or more. Therefore incentive schemes to increase the absorption of educated manpower in self-employment will continue to be necessary. The deficiencies in their implementation in the past will have to be remedied. These schemes should be linked to the new strategy of small industry expansion for which the Plan outlay is proposed to be increased from Rs. 510 crores (in the Fifth Plan) to Rs. 1410 crores in the next five years. The educated unemployed can be major beneficiaries of the growth of the small industry sector.

4.75 The expansion of the rural infrastructure and social service sectors under the Revised Minimum Needs Programme will absorb thousands of educated persons in the next five years.

4.76 The new community health workers programme and the nation-wide adult education programme should also bring some additional income to the non-matriculates and matriculates segments of the educated unemployed.

4.77 Other agricultural, animal husbandry, forestry, fishery and rural development programmes, and the introduction of full employment planning in 2,000 blocks, are also expected to generate substantial additional demand for educated manpower. At the district level, it is proposed to have planning cells with technical specialists in all districts. Similar smaller cells are also to be placed in each block.

4.78 An important programme in the agricultural sector in the Five Year Plan 1978—83 will be the intensification of the extension system in all States. It is estimated that when this programme covers all States, 20,500 additional village level workers and 4,150 additional graduates and postgraduates will be required. The animal husbandry programme Flood II is expected to create an additional demand for skilled workers at the primary cooperative and higher levels of the order of 142,415 persons by 1982-83.

4.79 It is difficult to quantify the additional employment of matriculate and graduate personnel which other programmes may generate. But the new production targets and investment allocations for these sectors are so much larger than in the past that this additional employment is likely to be quite significant.

4.80 A data system is proposed to be set up for the concurrent monitoring of additional employment created by all programmes. As the system begins to

* This gap should not be compared with the NSS-type estimates of unemployment bacause in NSS-type estimates, employment and labour force are not standardised.

function, precise information about the employment profile of growth in different sectors will be collected and published.

4.81 Even after credit is taken for all the additional employment that these programmes may generate, it is unlikely that the gap in the educated employment market can be closed without a determined effort to decelerate the out-turn of general arts, science and commerce graduates from the educational system, and to divert the matriculate population increasingly to non-clerical occupations.

4.82 A strong national consensus has already emerged about the major shifts in educational policy required to ease the situation in the educated labour market. These are discussed, in detail, in the Chapter on Education. But it may be useful to recapitulate them briefly as elements of employment policy.

4.83 First, it is proposed to increase the share of primary education and adult education in total educational outlay. This would entail some reduction in the share of colleges and university education.

4.84 Second, it is agreed that universities and colleges will be encouraged in every way to shift their emphasis to non-formal education systems, particularly evening and correspondence education, offering a variety of job-oriented curricula, with greater flexibility in respect of completion time, age of admission and multiple entry. This shift would reduce the load on the formal day-time education system, enable youth and adults to upgrade their knowledge at any time according to their situation and requirements and reduce the cost of subsidy to university education. Evening and correspondence courses have proved to be extremely popular and self-financing.

4.85 Third, it is recommended that the Government of India should immediately appoint a Public Sector Qualifications Commission—similar to the Pay Commission—for rationalizing the whole structure of essential and desirable qualifications for public sector posts. The Commission would reduce the number of job tiers, lay down detailed task-oriented specifications for each job category, and delink the required qualifications completely from general arts, science and commerce degrees. The possession of job specific knowledge and skills on the part of candidates would then be tested by means of open public examinations for which no general educational qualifications may be required. A restructuring of public sector recruitment on these lines will bring down the pressure of demand for general graduate degrees on the formal college system.

4.86 Side by side, similar Boards should be appointed to review recruitment policies and required qualifications in individual industries in the organised private sector, with the cooperation of employers' organisations.

4.87 Fourth, it is essential that the industrial and vocational training system be overhauled. For this purpose secondary school courses are being revised so as to become terminal courses for a majority of school leavers, and the vocational element in secondary education is being increased. But the reform needed most urgently is that the training of skilled workers and technicians be completely tailored to suit the needs of the employers, for otherwise trainees holding formal diplomas are not preferred by employers and remain unemployed for long periods of time. The only way to avoid this waste is that representatives of private and government employers in all important sectors should have a dominant voice in determining in detail the content of training in all training institutions.

4.88 Fifth, even in the reduced formal education system it is essential to establish the principle that subsidised college education is a right only of a limited number of qualified students coming from low-income households. Therefore, a dualistic structure of fees needs to be established. Deserving low-income students' tuition, residence and other expenses can be subsidised or even fully borne by the State subject to an upper limit on the number supported. But middle and upper income students should bear an increasing part of the cost of their college education. To help the middle class households finance the college education of their children, commercial banks should consider setting up an educational loan system.

4.89 Finally, the whole employment information system needs to be revamped with extension of the national employment service to areas uncovered so far. It will have to gather and publicise the most authentic and up-to-date information on employment trends in every region and sector more regularly and through all media. And its operation will have to be modernised so that employers and the unemployed willingly utilize its service to a larger extent.

Policy for Female Employment

4.90 The foregoing review of the employment situation of women revealed that female unemployment rates are higher than male rates—both on the weekly and the daily status basis. But their chronic unemployment rates are lower. This means that a smaller proportion of the women are in the labour market for regular whole-time employment. The primary need of a majority of women is part-time employment or employment in certain parts of the year.

4.91 This situation can change if expectations about the availability of regular employment change, as in the case of women graduates who are being absorbed in the organised sector in increasing numbers, and in the case of uneducated rural women from the poorest households in areas where work is guaranteed. Thousands of women are known to report even for earth work on Employment Guarantee works in Maharashtra.

4.92 The first major step to be taken to promote female employment is to expand and diversify the education and training opportunities available to women. Often biases are at work to prevent women from joining certain types of courses of education and training in sufficient numbers. It is assumed that women would not be interested in them. And training schemes for women are designed to cover only light and low-paying activities such as garment making, toy

making, the processing of textiles, light handicrafts, etc. These biases have to be eliminated by issuing clear instructions to the effect that special consideration should be given to the admission of women students to all educational and training programmes on a strictly non-discriminatory basis.

4.93 The second important policy to promote female employment is that all those industries and occupations which have been identified as "women-preferred", be specially stimulated by the Governments investment programmes. For a higher growth in these sectors will automatically lead to a higher rate of growth of female employment. In taking investment decisions in the next five years, care will be taken to keep this angle in view. In some of women-preferred occupations in the organised sector, such as all kinds of office work, and work in textiles, chemical and electronic industries, it is recomended that preference be given to qualified women.

4.94 Thirdly, in order to promote self-employment and small-industry employment among women, the most crucial requirement is that in the allocation of cooperative and commercial bank credit and other aid (training, technical assistance, marketing facilities, hire/purchase of machinery, sheds in industrial estates, etc.) a reasonable share is available for potential women entrepreneurs and women cooperatives employing a majority of women workers.

4.95 The experience of the Maharashtra Employment Guarantee Scheme has shown that in low-income households the extra income earned by women is vital for these households to cross the poverty line. Therefore, in all the comprehensive area development plans, manpower budgeting of the female labour force should be a special component and the schemes included in the plans should be carefully designed to offer a variety of training and work opportunities to women.

LIST OF TABLES

Table No.	Contents	Page
4.1.	Labour Force, Work Force and Chronic Unemployment in March, 1971, 1973 and 1978 by Sex and Residence.	93
4.2.	Estimated Rural and Urban Unemployment.	94
4.3.	Daily Status Unemployment by States, 1972—73.	94
4.4.	Distribution of Work Force in 1971 (March) by Main Industrial Divisions.	95
4.5.	Distribution of Work Force in 1921-71.	95
4.6.	Share of Agriculture in the Labour Force.	96
4.7.	Recorded Employment by Industry Divisions—1966-67 to 1973-74.	96
4.8.	Work Force in the Unorganised Sector.	97
4.9.	Industrial Distribution of Employment in Organised and Unorganised Sector	97
4.10.	Projected Distribution of Total Labour Force in India, 1961, 1971 and 1978.	98
4.11.	Projected Distribution of Total Labour Force in India, 1978 and 1983.	98
4.12.	Projection of Population in 1978 and 1983 (March) by Levels of Education.	99
4.13.	Estimated Stock, Employment and Unemployment of Graduates and Engineers, Diploma holders in 1977-78 and 1982-83.	100
4.14.	Female Work Force, Labour Force and Participation Rates.	101
4.15.	Estimated Male and Female Unemployment.	101
4.16.	Employment in the Organised Sector.	101
4.17.	Non-farm Sectors with a High Share of Women in Total Employment, 1971.	102
4.18.	Sectoral Employment Generation, 1978-83 (Input-Output Model).	103

All projections for 1983, including those of unemployment, assume the continuation of present trends, except where stated otherwise. But Table 4.18 and the Tables in the text show the likely effect of the proposed production pattern with presently available data.

Table 4.1 : Labour Force, Work Force and Chronic Unemployment[1] in March 1971, 1973 and 1978 By Sex and Residence

Sl. No.	Head	Rural Males			Rural Females			Urban Males			Urban Females			Total		
		1971	1973	1978	1971	1973	1978	1971	1973	1978	1971	1973	1978	1971	1973	1978
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
																(Million)
1.	Labour Force .	124.24	128.66	140.29	68.27	70.97	77.87	30.90	32.86	38.14	7.07	7.63	8.99	230.48	240.13	265.29
2.	Work Force .	122.83	127.17	138.66	67.95	70.63	77.50	29.45	31.29	36.31	6.64	7.17	8.45	226.87	236.26	260.92
3.	Chronic Unemployment .	1.41	1.49	1.63	0.32	0.34	0.37	1.45	1.57	1.83	0.43	0.46	0.54	3.61	3.87	4.37

1. The labour force for 1971 has been estimated by the Planning Commission as the 1971 Census figure was an underestimate.
2. The data for 1973 are from the Report "Employment—Unemployment Situation at a glance" of the 27th Round of the National Sample Survey. For 1971 the estimates are based on the sex-age-residence usual status rates of the 27th Round of the National Sample Survey. For 1978 the same sex-residence rates were applied to the recent population projections of the Registrar General.
3. Work force estimates are derived by subtracting chronically unemployed from the labour force estimates.

[1] In population with age 5 years or more.

Table 4.2 : Estimated Rural and Urban Unemployment

Sl. No.	Type of Unemployment	1971	1973		1978	1983
		Unemployment	Unemployment	Rate	Unemployment	Unemployment
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1.	Rural	(Million)	(Million)	(%)	(Million)	(Million)
	Usual Status (Chronic)	1.73	1.83	0.92	2.00	2.20
	Weekly Status	7.04	7.46	3.88	8.15	8.98
	Daily Status	14.21	15.06	8.20	16.47	18.10
2.	Urban					
	Usual Status (Chronic)	1.88	2.04	5.03	2.37	2.77
	Weekly Status	2.41	2.61	6.56	3.04	3.55
	Daily Status	3.24	3.52	8.97	4.09	4.78
Total						
	Usual Status (Chronic)	3.61	3.87	1.60	4.37	4.97
	Weekly Status	9.45	10.07	4.33	11.20	12.53
	Daily Status	17.45	18.57	8.34	20.56	22.88

Figures refer to 31st March of 1971, 1973, 1978 and 1983. They have been estimated by applying 1972-73 National Sample Survey 27th Round participation and unemployment rates for rural and urban males and females to the projection of the population of age 5 years or more.

Table 4.3 : Daily Status Unemployment by States, 1972-73

Sl. No.	State/Union Territory	Unemployment in equivalent Person-years	Share of State in Total All-India Unemployent	Unemployment Rate	Share of the State in Total All-India Labour Force
(0)	(1)	(2)	(3)	(4)	(5)
		(Million)	(Per cent)	(Per cent)	(Per cent)
1.	Tamil Nadu	2.35	12.63	12.17	8.68
2.	Andhra Pradesh	2.32	12.49	12.01	8.70
3.	Maharashtra	2.22	11.93	9.73	10.26
4.	Bihar	2.05	11.05	10.24	9.02
5.	Kerala	1.88	10.11	25.23	3.35
6.	West Bengal	1.64	8.79	10.66	6.90
7.	Uttar Pradesh	1.22	6.54	3.68	14.86
8.	Karnataka	1.18	6.36	9.20	5.78
9.	Orissa	1.01	5.43	10.82	4.20
10.	Madhya Pradesh	0.71	3.85	3.67	8.77
11.	Gujarat	0.66	3.56	6.36	4.68
12.	Rajasthan	0.49	2.62	3.72	5.89
13.	Punjab	0.23	1.26	4.54	2.33
14.	Haryana	0.15	0.79	4.10	1.61
15.	Jammu & Kashmir	0.14	0.74	8.38	0.74
16.	Assam	0.09	0.48	1.98	2.02
17.	Delhi	0.08	0.42	5.47	0.64
18.	Goa	0.07	0.36	18.97	0.16
19.	Tripura	0.04	0.19	6.41	0.25
20.	Pondicherry	0.03	0.16	17.86	0.08
21.	Manipur	0.02	0.11	5.14	0.17
22.	Himachal Pradesh	0.01	0.06	0.82	0.65
23.	Meghalaya	0.01	0.05	1.82	0.22
24.	Chandigarh	*	0.01	†	0.03
25.	Nagaland	*	0.01	†	0.01
	All-India	18.57	100.00	8.34	100.00

*Less than 5 thousands.
†Negligible

Table 4.4 : Distribution of Work Force in 1971 (March) by Main Industrial Divisions *

Sl. No.	Industry Division	Work Force in 1971 (March)	
(0)	(1)	(2)	(3)
		(Million)	(Percentage)
1.	Agriculture	167.33	73.8
2.	Mining and Quarrying	1.05	0.4
3.	Manufacturing and Repair	21.32	9.4
4.	Electricity, Gas & Water	0.56	0.2
5.	Construction	2.43	1.1
6.	Wholesale & Retail Trade, etc.	9.70	4.3
7.	Transport, Storage and Communications	4.60	2.0
8.	Services	19.88	8.8
	All Divisions	226.87	100.00

* Estimated by the Planning Commission.

The 1971 estimate of the work force is shown in Table 4.1. The total work force in 1971 is broken into the rural male, rural female, urban male and urban female work force, using the sex-residence distribution of the usual status work force in the 27th Round of the National Sample Survey. The total work force in three of these categories (rural males, urban males and urban females) is distributed across Industrial Divisions in the same proportion as in the 1971 Census. But the total work force of rural females is distributed among Industrial Divisions in the same proportion as in the Census of 1961. The reason for this procedure is that the rural female work force was grossly under-estimated in the 1971 Census.

Table 4.5 : Distribution of Works Force in 1921—71

Census year	Agriculture*		Mining & Manufacturing		Others		Total	
	Number (Million)	Percentage	Number (Million)	Percentage	Number (Million)	Percentage	Number (Million)	Percentage
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1971	167.33	73.8	22.37	9.8	37.17	16.4	226.87	100.0
1961	137.80	73.0	19.61	10.4	31.26	16.6	188.67	100.0
1951	101.92	72.8	13.02	9.3	25.06	17.9	140.00	100.0
1941	89.54	74.0	11.13	9.2	20.33	16.8	121.00	100.0
1931	89.23	72.0	10.79	8.7	23.93	19.3	124.00	100.0
1921	87.72	73.1	10.80	9.0	21.48	17.9	120.00	100.0

Sources : 1. Census of India, 1961, Monograph No. 4 p. 25, for 1921 to 1951.

2. Census of India, 1961—General Economic Tables—Part II B (i) , for 1961.

3. For 1971, the figures are estimated by Employment & Manpower Planning Division, Planning Commission.

* Including animal husbandry, fishery and forestry work force.

Table 4.6 : Share of Agriculture in the Labour Force

Sl. No.	Country	1965	1975	Change
(0)	(1)	(2)	(3)	(4)
		(Per cent)		
1.	Afghanistan	84	79	—5
2.	Bangladesh	73	67	—6
3.	Burma	67	69	+2
4.	Cambodia	80	73	—7
5.	China, Republic of	42	29	—13
6.	Indonesia	72	67	—5
7.	Korea	62	54	—8
8.	Laos	81	74	—7
9.	Malaysia	60	52	—8
10.	Nepal	94	89	—5
11.	Pakistan	73	67	—6
12.	Philippines	59	54	—5
13.	Sri Lanka	54	50	—4
14.	Thailand	81	72	—9

Source : Asian Agricultural Survey, 1976.

Table 4.7 : Recorded Employment by Industry Divisions—1966-67 to 1973-74

Division Code	Industry Division	Recorded Employment as on 31st March							
		1967	1968	1969	1970	1971	1972	1973	1974
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
								(No. 000)	
0.	Plantations, Forestry, etc.	1219	1202	1194	1127	1212	1206	1209	1286
1.	Mining and Quarrying	765	739	718	704	685	706	783	834
2&3.	Manufacturing	4450	4420	4481	4641	4804	4986	5140	5294
4.	Construction	989	902	942	948	1018	1081	1193	1118
5.	Electricity, Gas, etc.	377	372	425	473	500	532	575	619
6.	Trade and Commerce	2437	2508	2609	2724	2888	3069	3212	3343
7.	Transport, Storage & Communications	2369	2397	2437	2458	2503	2564	2611	2642
8.	Services	6003	6117	6256	6415	6604	6823	7118	7349
	Total	**18609**	**18657**	**19062**	**19480**	**20214**	**20967**	**21841**	**22485**

Sources :

For tea and coffee plantations, data collected under the Plantation Labour Act.
For rubber, Rubber Board Statistics.
For forestry, Employment Market Information data.
For coal mining, Employment Market Information data.
For mines other than coal, data collected under the Mines Act.
For manufacturing and electricity, Annual Survey of Industries.
For trade and commerce, data collected under the Shops and Commercial Establishment Act and the Weekly Holiday Act.
For railways, Railway Board Statistics.
For posts and telegraphs, data from the Director General of Posts & Telegraphs.
For other transport, storage and communications, Employment Market Information data.
For services, Employment Market Information data.

Table 4.8 : Work Force in the Unorganised Sector

Sl. No.	Industry Division	1961		1971	
		Million	%age	Million	%age
(0)	(1)	(2)	(3)	(4)	(5)
1.	Agriculture	**136.68**	**78.6**	**166.12**	**80.4**
	(a) Cultivators	99.62	57.3	110.61	53.5
	(b) Agricultural Labourers	31.52	18.1	50.36	24.4
	(c) Others	5.54	3.2	5.15	2.5
2.	Mining and Quarrying	0.21	0.1	0.36	0.2
3.	Manufacturing and Repairs	14.97	8.6	16.52	8.0
4.	Electricity, Gas & Water	0.55	0.3	0.06	—
5.	Construction	1.27	0.7	1.41	0.7
6.	Wholesale and Retail Trade, Restaurants and Hotels	5.99	3.4	6.81	3.3
7.	Transport, Storage and Communications	1.18	0.7	2.10	1.0
8.	Services	13.21	7.6	13.28	6.4
	All Divisions	**174.06**	**100 0**	**206.66**	**100.0**

The work force in the unorganised sector is obtained by subtracting recorded employment (Table 4.7) from the total work force in each industry division as given in Table 4.4

Table 4.9 : Industrial Distribution of Employment in Organised and Unorganised Sectors

Sl. No.	Industry Division	Employment	1961		1971	
(0)	(1)	(2)	(3)		(4)	
			(Million)			
1.	Agriculture	A. Total	137.80	(100.0)	167.33	(100.0)
		B. Recorded	1.12	(0.8)	1.21	(0.7)
		C. Unorganised	136.68	(99.2)	166.12	(99.3)
	(a) Cultivators	A. Total	99.62	(100.0)	110.61	(100.0)
		B. Recorded	0.00	(0.0)	0.00	(0.0)
		C. Unorganised	99.62	(100.0)	110.61	(100.0)
	(b) Agricultural Labourers	A. Total	31.52	(100.0)	50.36	(100.0)
		B. Recorded	0.00	(0.0)	0.00	(0.0)
		C. Unorganised	31.52	(100.0)	50.36	(100.0)
	(c) Others	A. Total	6.66	(100.0)	6.36	(100.0)
		B. Recorded	1.12	(16.8)	1.21	(19.0)
		C. Unorganised	5.54	(83.2)	5.15	(81.0)
2.	Mining & Quarrying	A. Total	0.96	(100.0)	1.05	(100.0)
		B. Recorded	0.75	(78.1)	0.69	(65.7)
		C. Unorganised	0.21	(21.9)	0.36	(34.3)
3.	Manufacturing & Repair	A. Total	18.65	(100.0)	21.32	(100.0)
		B. Recorded	3.68	(19.7)	4.80	(22.5)
		C. Unorganised	14.97	(80.3)	16.52	(77.5)
4.	Electricity, Gas and Water	A. Total	0.66	(100.0)	0.56	(100.0)
		B. Recorded	0.11	(16.7)	0.50	(89.3)
		C. Unorganised	0.55	(83.3)	0.06	(10.7)
5.	Construction	A. Total	2.15	(100.0)	2.43	(100.0)
		B. Recorded	0.88	(40.9)	1.02	(42.0)
		C. Unorganised	1.27	(59.1)	1.41	(58.0)
6.	Wholesale and Retail Trade, Restaurants and Hotels	A. Total	7.96	(100.0)	9.70	(100.0)
		B. Recorded	1.97	(24.7)	2.89	(29.8)
		C. Unorganised	5.99	(75.3)	6.81	(70.2)
7.	Transport, Storage and Communications	A. Total	3.14	(100.0)	4.60	(100.0)
		B. Recorded	1.96	(62.4)	2.50	(54.3)
		C. Unorganised	1.18	(37.6)	2.10	(45.7)
8.	Services	A. Total	17.35	(100.0)	19.88	(100.0)
		B. Recorded	4.14	(23.9)	6.60	(33.2)
		C. Unorganised	13.21	(76.1)	13.28	(66.8)
	All Divisions	A. Total	188.67	(100.0)	226.87	(100.0)
		B. Recorded	14.61	(7.7)	20.21	(8.9)
		C. Unorganised	174.06	(92.3)	206.66	(91.1)

Figures in Parentheses show the shares of recorded and unorganised employment in the total work force of each Industrial Division.

Table 4.10 : Projected Distribution of Total Labour Force in India 1961, 1971 and 1978

(Million)

Sl. No.	Category	As on 31st March		
		1961	1971	1978
(0)	(1)	(2)	(3)	(4)
1.	Chronically unemployed	1.42	3.61	4.37
2.	Working Force—Agriculture	137.80	167.33	192.43+
3.	Working Force—Non-Agriculture	50.87	59.54	68.49
	(a) Recorded Employment	14.61	20.21	24.83*
	(b) Other Informal Activities**	36.26	39.33	43.66
	Total Labour Force	**190.09**	**230.48**	**265.29**

+Derived by applying to the 1978 labour force, the average proportion of agricultural working force to the labour force as observed during 1961 and 1971.

*Obtained by adding the projected recorded employment in the public and private sectors. Public sector recorded employment was projected by assuming that the average annual increase in recorded employment observed during the period March 1967 to March 1974 will continue in the period March 1974 to March 1978. Private sector recorded employment was obtained by applying the estimated elasticity of private sector employment with respect to the index of industrial production during the period March 1967 to March 1974, to the annual growth in industrial production over the period March 1974 to March 1978.

**Obtained as a residual i.e. non-agricultural working force (—) recorded employment.

Table 4.11 : Projected Distribution of Total Labour Force in India, 1978 and 1983

Sl. No.	Category	As on 31st March		Increase in 1983 over the 1978 Figure
		1978	1983	
(0)	(1)	(2)	(3)	(4)
				(Million)
1.	Chronically Unemployed	4.37(a)	4.97(a)	0.60
2.	Working Force—Agriculture	192.43	213.82	21.39
3.	Working Force— Non-Agriculture	68.49	76.05	7.56
	(a) Recorded Employment	24.83*	27.56(b) **	2.73
			27.82(c)	2.99
	(b) Other Informal Activities	43.66	48.49 (b)	4.83
			48.23(c)	4.57
	Total Labour Force	**265.29**	**294.84**	**29.55**

*Obtained by adding the projected recorded employment in the public and private sectors. Public sector recorded employment was projected by assuming that the average annual increase in recorded employment observed during the period March 1967 to March 1974 will continue in the period March 1974 to March 1983. Private sector recorded employment was obtained by applying the estimated elasticity of private sector employment with respect to the index of industrial production during the period March 1967 to March 1974, to the annual growth in industrial production over the period March 1974 to March 1978.

**Obtained by the same method as the figure for 1978 with the only difference that private sector employment in the organised sector has been worked out on the basis of two alternative rates of growth of industrial production assumed for the next five years —5 per cent Figure (b) and 7 per cent Figure (c)

(a) The number of chronically unemployed has been estimated on the assumption that the rate of chronic unemployment will remain at the level of 1972-73.

Table 4.12 : Projection of Population in 1978 and 1983 (March) by Levels of Education

Sl. No.	Population	Projection of Population			
		1978	1983 Assuming Growth with Literacy Percentage at		
			1.5 points Per Annum	2 Points Per Annum	3 Points Per Annum
(0)	(1)	(2)	(3)	(4)	(5)
					(Lakhs)
1.	Illiterate	4,122.30	4,008.90	3,834.60	3,486.00
2.	Literate	2,219.70	2,963.10	3,137.40	3,486.00
	(a) Literate, Non-Matriculates	1,850.60	2,442.70	2,617.00	2,965.60
	(b) Matriculates/Higher Secondary	290.60	410.60	410.60	410.60
	(c) Non-technical Certificate/Diploma Holders (Not Equal to Degree)	7.60	10.80	10.80	10.80
	(d) Technical Certificate/Diploma Holders (Not Equal to Degree)	6.40	9.00	9.00	9.00
	(e) Graduates	64.50	90.00	90.00	90.00
Total*		**6,342.00**	**6,972.00**	**6,972.00**	**6,972.00**

*Expert Committee estimates.

(1) The literacy rate was 16.6 per cent in 1951, 24.0 per cent in 1961 and 29.4 per cent in 1971. The literacy percentage increased by 5 points during the decade 1961—71. During 1971—74 also it increased 0.5 percentage point per annum. The outlook for 1974-78 is growth by 1 point every year so that the literacy rate should rise to 35 per cent in 1978. For the period 1978—83 three projections have been made by assuming annual growth in the literacy rate 1.5, 2 and 3 percentage points.

(2) Projections of graduates are based on a special study. See Table 4.13.

(3) For matriculates, the 1971 Census figure has been taken as the base figure. The annual out-turn assumed is based on the trend during the fifteen years—1956—70. The attrition rate assumed is 0.8 per cent per annum. The stock of diploma/certificate holders is estimated on the assumption that ratio of this stock to the stock of matriculates remains the same as in the Census of 1971.

(4) The stock of non-matriculate literates is computed by deducting from the literate population estimates for categories (b),(c),(d) and (e).

Table 4.13 : Estimated Stock, Employment and Unemployment of Graduates and Engineering Diploma Holders in 1977-78 and 1982-83

Sl. No.	Category	1977-78			1982-83			Increase in stock 1982-83 over 1977-78			Percentage Increase in stock 1982-83 over 1977-78		
		Stock			Stock			Stock			Stock		
		Total	Employed	Un-employed	Total	Employed	Un-employed	Total	Employed	Un-employed	Total	Employed	Un-employed
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1.	Engineers (Degree)	251860 (100.00)	245826 (97.6)	6034 (2.4)	322000 (100.00)	312591 (97.1)	9409 (2.9)	70140 (100.00)	66765 (95.2)	3375 (4.8)	27.8	27.2	55.9
2.	Engineers (Diploma)	346730 (100.00)	310680 (89.6)	36050 (10.4)	464290 (100.00)	390565 (84.1)	73725 (15.9)	117560 (100.00)	79885 (67.9)	37675 (32.1)	33.9	25.7	104.5
3.	Medical Graduates & Post-Graduates	174320 (100.00)	170980 (98.1)	3340 (1.9)	216090 (100.00)	209600 (97.0)	6490 (3.0)	41770 (100.00)	38620 (92.4)	3150 (7.6)	24.0	22.6	94.3
4.	Agricultural Graduates & Post-Graduates	93360 (100.00)	87806 (94.1)	5554 (5.9)	114190 (100.00)	109481 (95.9)	4709 (4.1)	20830 (100.00)	21675 (104.0)	—845 (—4.0)	22.3	24.7	—15.2
5.	Veterinary Graduates & Post-Graduates	19336 (100.00)	22690 (117.3)	(—)3354 (—17.3)	22616 (100.00)	28495 (126.0)	(—)5879 (—26.0)	3280 (100.00)	5805 (177.0)	—2525 (—77.0)	17.0	25.6	..
6.	Arts Graduates	2842130 (100.00)	2531879 (89.1)	310251 (10.9)	4019420 (100.00)	3240865 (80.6)	778555 (19.4)	1177290 (100.00)	708986 (60.2)	468304 (39.8)	41.4	28.0	150.9
7.	Arts Post-Graduates	801680 (100.00)	767004 (95.7)	34676 (4.3)	1091900 (100.00)	1030642 (94.4)	61258 (5.6)	290220 (100.00)	263638 (90.8)	26582 (9.2)	36.2	34.4	76.7
8.	Science Graduates	1182272 (100.00)	992216 (83.9)	190056 (16.1)	1694660 (100.00)	1423434 (84.0)	271226 (16.0)	512388 (100.00)	431218 (84.2)	81170 (15.8)	43.3	43.4	42.7
9.	Science Post-Graduates	243412 (100.00)	228588 (93.9)	14824 (6.1)	317742 (100.00)	293340 (92.3)	24402 (7.7)	74330 (100.00)	64752 (87.1)	9578 (12.9)	30.5	28.3	64.6
10.	Commerce Graduates	753024 (100.00)	658283 (87.4)	94741 (12.6)	1091070 (100.00)	903267 (82.8)	187803 (17.2)	338046 (100.00)	244984 (72.5)	93062 (27.5)	44.9	37.2	98.2
11.	Commerce Post-Graduates	100260 (100.00)	96930 (96.7)	3330 (3.3)	138847 (100.00)	124012 (89.3)	14835 (10.7)	38587 (100.00)	27082 (70.2)	11505 (29.8)	38.5	27.9	345.5
	Total	**6808384** (100.00)	**6112882** (89.8)	**695502** (10.2)	**9492825** (100.00)	**8066292** (85.0)	**1426533** (15.0)	**2684441** (100.00)	**1953410** (72.8)	**731031** (27.2)	**39.4**	**32.0**	**105.1**

Figures in perentheses indicate percentages of the stock of each group.

For each manpower group a base period stock estimate is built up. Projections have been made with assumed rates of institutional out-turn and attrition due to retirement, death and migration.

In the case of arts, science and commerce graduates, the base period stock is for 1971 Census figures. Available out-turn and attrition rates are applied to this stock. The attrition rates vary from 1 per cent to 2 per cent for different categories of graduates.

Unemployment is estimated by applying to live register figures adjustment factors worked out by the Directorate-General of Employment and Training in 1968 and 1972. Employemnt in 1968—76 is estimted by deducting the estimated number of unemployed from the estimated stock. The annual rate of absorption during the period 1968—76 is used for projecting employment in 1977-78 and 1982-83. For these years unemployment is estimated as the residual. For arts, science and commerce graduates the annual rate of absorption assumed relates to the period 1971 to 1976.

Table 4.14 : Female work Force, Labour Force and Participation rates

Sl. No.	Head	Unit	1961	1971 (a)	1971 (b)	1978	1983
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Work Force	Million	59.50	33.60	74.59	85.95	95.25
2.	Work Force Participation Rate	Per cent	27.95	12.73	28.25	28.25(c)	28.25(c)
3.	Labour Force	Million	59.63	34.13	75.34	86.86	96.30
4.	Labour Force Participation Rate	Per Cent	28.0	13.0	28.6	28.6(c)	28.6(c)

(a) Original Census data.
(b) Adjusted Planning Commission estimate.
(c) Assumed.

Table 4.15 : Estimated Male and Female Unemployment

Sl. No.	Type of Estimates	1971	1973		1978	1983
		Unemployment	Unemployment	Rate	Unemployment	Unemployment
(0)	(1)	(2)	(3)	(4)	(5)	(6)
		(Million)	(Million)	(%)	(Million)	(Million)
1.	Male					
	Usual status	2.86	3.07	1.89	3.46	3.92
	Weekly status	5.44	5.81	3.62	6.47	7.26
	Daily status	10.53	11.22	7.08	12.42	13.84
2.	Female					
	Usual status	0.75	0.80	1.01	0.91	1.05
	Weekly status	4.01	4.26	5.90	4.72	5.27
	Daily status	6.92	7.35	11.42	8.14	9.04
	Total					
	Usual status	3.61	3.87	1.60	4.37	4.97
	Weekly status	9.45	10.07	4.33	11.20	12.53
	Daily status	17.45	18.57	8.34	20.56	22.88

Figures of unemployment for 31st March 1971, 1973, 1978 and 1983 have been estimated by applying 1972-73 National Sample Survey 27th Round proportions of labour force and unemployment to projections of population (of age 5 or more) of rural and urban males and females.

Table 4.16 : Employment in the Organised Sector

As on 31st March	Total (Lakh)	Women (Lakh)	Percentage of Women to Total Workers
(1)	(2)	(3)	(4)
1971	174.91	19.24	11.0
1972	179.78	20.15	11.2
1973	188.24	21.35	11.3
1974	192.80	21.88	11.3
1975	196.71	22.31	11.3
1976	202.07	23.97	11.9
1977	207.15	24.92	12.0

Source : Directorate Generaal, Employment & Training, Ministry of Labour

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Table 4.17 : Nonfarm Sectors with a High Share of Women in Total Employment, 1971

Sl. No.	Share of Woman workers	NIC-1970 Code No.	Description of the Sector	Female Employment (Adjusted) (00)
(0)	(1)	(2)	(3)	(4)
1.	40% to 50%	011	Coffee Plantations	700
		121	Manganese ore mining	241
		211	Manufacture of other edible oils and fats, e.g., mustard oil, groundnut oil, til oil	1262
		213	Coffee curing, roasting and grinding	57
		226	Manufacture of bidi	5317
		230	Cotton ginning, cleaning and baling	405
		261	Manufacture of all types of threads, cordage, ropes, nets	591
		262	Embroidery and making of crepes, laces, fringes	416
		960 } 969	Domestic service and miscellaneous personal services	8921
		961	Laundry services, cleaning and dyeing plants	6661
2.	50% to 60%	010	Tea Plantations	5683
		023	Rearing of pigs and other animals	231
		024	Rearing of ducks, hens and other birds and production of eggs.	171
		025	Rearing of bees, production of honey and wax	43
		204	Manufacture of grain mill products	3511
		235	Weaving and finishing of cotton textiles in handlooms other than khadi	11504
		241	Wool spinning, weaving and finishing in mills	312
		910	Sanitation and similar services	2415
3.	60% to 70%	018	Production of Ganja, Cinchona, opium, etc.	39
		201	Manufacture of dairy products.	1142
		225, 229	Tobacco stemming, redrying and all other operations connected with raw leaf tobacco for manufacture, and manufacture of tabacco products	529
		317	Manufacture of matches	413
4.	70% to 80%	026	Rearing of silk worms, production of cocoons and raw silk	482
		052	Production of fuel by exploitation of forests	504
		054	Gathering of uncultivated material, e.g., gums, resins, lac, barks, herbs, wild fruits and leaves by exploitation of forests	278
		242	Wool spinning and weaving other than in mills	850
		325	Manufacture of mica products	146
5.	80% to 90%	053	Gathering of fodder by exploitation of forests	126
		202	Canning and preservation of fruits and vegetables	434
		268	Manufacture of coir and coir products	3012
6.	90% and above	013	Tobacco plantations	228
		233	Cotton Spinning other than in mills (charkha spinning)	6431
			Total	**63055**

Table 4.18 : Sectoral Employment Generation, 1978—83
(Input-Output Model)

Sl. No.	Name of the Sector	Estimated Employment* (millions)		Increase (million)	Share of Sector in total Employment (%) in 1982-83
		1977-78	1982-83		
(0)	(1)	(2)	(3)	(4)	(5)
1.	**Agriculture**	**99.213**	**121.981**	**22.768**	**56.387**
	1.1 Paddy	16.127	19.019	2.892	8.792
	1.2 Wheat	6.150	7.413	1.263	3.427
	1.3 Jowar	4.436	4.757	0.321	2.199
	1.4 Bajra	2.257	2.698	0.441	1.247
	1.5 Other cereals	4.326	4.134	(—)0.192	1.911
	1.6 Pulses	3.408	4.192	0.784	1.938
	1.7 Sugar Cane	2.830	3.276	0.446	1.514
	1.8 Jute	0.740	0.941	0.201	0.435
	1.9 Cotton	1.972	2.439	0.467	1.127
	1.10 Plantation	4.467	5.222	0.755	2.414
	1.11 Other crops	13.374	16.535	3.161	7.643
	1.12 Other agricultural Sectors	39.126	51.355	12.229	23.739
2.	**Mining & Quarrying**	**0.899**	**1.346**	**0.447**	**0.622**
3.	**Manufacturing**	**22.736**	**31.654**	**8.918**	**14.632**
	3.1 Food	3.292	3.999	0.707	1.849
	3.2 Beverages	0.381	0.448	0.067	0.207
	3.3 Tobacco	1.707	1.854	0.147	0.857
	3.4 Textiles	6.076	8.114	2.038	3.751
	3.5 Footwear etc.	0.858	1.139	0.281	0.527
	3.6 Wood & Wood products	1.702	2.900	1.198	1.341
	3.7 Paper & Paper products	0.138	0.186	0.048	0.086
	3.8 Printing, Publishing etc.	0.252	0.409	0.157	0.189
	3.9 Leather & leather products	0.121	0.158	0.037	0.073
	3.10 Rubber products	0.155	0.224	0.069	0.104
	3.11 Chemicals	1.047	1.599	0.552	0.739
	3.12 Products of Petroleum	0.063	0.098	0.035	0.045
	3.13 Non-metallic mineral products	2.457	4.270	1.813	1.974
	3.14 Basic Metals	0.602	0.923	0.321	0.427
	3.15 Metal Products	0.801	1.140	0.339	0.527
	3.16 Electrical machinery	0.247	0.331	0.084	0.153
	3.17 Other Machinery	0.572	0.784	0.212	0.362
	3.18 Transport Eqpts.	0.584	0.758	0.174	0.350
	3.19 Miscellaneous Mfg.	1.681	2.320	0.639	1.072
4.	**Other Sectors**	**44.221**	**61.349**	**17.128**	**28.359**
	4.1 Electricity, Gas & Water	0.826	1.380	0.554	0.638
	4.2 Construction	3.110	5.370	2.260	2.482
	4.3 Railways	2.720	3.458	0.738	1.598
	4.4 Other Transport	3.362	4.692	1.330	2.169
	4.5 Other services	34.203	46.449	12.246	21.471
	Grand Total	**167.071**	**216.330**	**49.261**	**100.00**

Figures are given for aggregated sectors on the basis of primary calculations for the 89 input-output sectors model.

*Equivalent full-time person years. The concept and the method of estimation of the labour-coefficient used will be explained in a technical paper.

ALLOCATION OF CAPACITY IN THE SUGAR INDUSTRY

This Annex reports a study of the economics of alternative techniques in the sugar sector. The paper presents : (1) basic economics parameters for the white sugar (vacuum pan or VPS technology) and Khandsari sugar (open pan or OPS technology) sub-sectors of the sugar industry, (2) the results of a linear programming exercise which was chosen as the appripriate methodology for solving the capacity allocation problem, and (3) the major policy recommendations based on this exercise.

Factual Background

In 1976-77 VPS sugar production is estimated to be 48.0 lakh tonnes and OPS sugar production, 12.0 lakh tonnes. Thus total sugar production in the two sub-sectors in 1976-77 was 60.0 lakh tonnes. This total is projected to increase to 76.3 lakh tonnes in 1982-83.* Thus the required increase in output is 16.3 lakh tonnes.

The fixed capital required per tonne of sugar is estimated to be Rs. 2,246 per tonne in the OPS process (assuming 6.8 per cent recovery) and Rs. 4,349 per tonne in the VPS process. Thus the capital output ratio in the OPS process is about half of the cost in the VPS process. (See Table 4.19).

Employment in the OPS process (43 mandays per tonne) is more than four times the employment in the VPS process (10 mandays per tonne).

The average cost of production in the OPS sector (Rs. 4098 per tonne) is however 26 per cent higher than in the VPS sector (Rs. 3254 per tonne). But this is the case when Rs. 700 per tonne is included as the quality preference adjustment in the cost of OPS sugar. Without this adujustment, the average cost of OPS khandsari sugar (Rs. 3398 per tonne) is higher than the cost of VPS mill sugar by only 4 per cent. These calculations are based on the actual differential input prices paid by OPS and VPS Units.

Table 4.19 : The Economics of White and Khandsari Sugar

Sl. No.	Head	Unit	White VPS Sugar	Khandsari OPS Sugar	Difference (Per cent)
(0)	(1)	(2)	(3)	(4)	(5)
1.	Fixed Capital	Rs./Tonne	4349	2245	—49
2.	Employment Days . .	Tonne	10	43	+330
3.	Cost of Production . .	Rs./Tonne	3254	3398	+4
4.	(a) Cost of Production . .	Rs./Tonne	3254	4098	+26

Thus the factors that make khandsari sugar 26 per cent costlier than white sugar are lower recovery and the quality adjustment. Otherwise khandsari units require nearly half the capital per tonne as compared to white mill sugar, and create 4 times employment per tonne as compared to VPS mills, although they pay half the daily wages (Rs. 5) as compared to VPS mills (Rs. 10).

Results of the Programming Exercise

Linear programming is obviously a suitable tool for solving the kind of choice problem we face with these data. If cost minimisation is the only objective of policy, only white sugar should be produced because it is cheaper. Extra capacity should be created only in the white sugar sector. But since the maintenance and expansion of employment is an additional objective, cost minimisation has to be made subject to a minimum employment-Constraints. In addition, a maximum investment-constraint has to be specified because the saving of capital is also an objective.

The minimum employment which the sugar sector as a whole should generate, and the maximum investment that should be allowed in the industry, are essentially policy choices. In the present exercise, these quantities were chosen on the basis of the following reasoning.

If the production-mix and the technology-mix are not deliberately changed, total employment would grow at the same rate as total output because labour and capital coefficients are supposed to be fixed. Since production is targeted to grow 27.17 per cent (from 60 lakh tonnes in 1976-77 to 76.3 lakh tonnes in 1982-83), employment would also grow to the same extent. In this exercise we have assumed that the growth of employment should be 40.76 per cent or one-and-a-half times the growth of output. This means that it should grow from 911 lakh mandays in 1976-77 to 1,282 lakh mandays in 1982-83. Currently the growth of employment in large-scale industry is usually half of the growth of output. When small industry units are included, it is reasonable that employment growth should be faster than output growth. The norms of employment growth being 50 per cent faster than output growth seems reasonable because labour absorption in the whole country has to grow one-and-a-half times the growth of the labour force if present and prospective unemployment is to be eliminated in ten years. This norm also yielded feasible rates of capacity expansion in the OPS sector, in comparison with alternative norms which were tried.

As regards the maximum investment limit, it is clear that if the whole additional demand for sugar is met by VPS production, the extra investment would have to be Rs. 708.89 crores. If the whole additional capacity required is created in the OPS Sector, the capital requirement would be Rs. 366.10 crores. In order to achieve some saving of capital, three intermediate levels of investment were specified : at one-fourth, one-half and three-fourths of the distance between these limits.

Alternative simulations showed that with a tight capital-constraint, the model allocates three-fourths of the capacity to the khandsari sector, with a middle level capital-constraint, it allocates half and with a high-level capital-constraint, it allocates 38 per cent of the new capacity to the khandsari sector.

(a) With Rs. 700 per tonne added to the khandsari cost as quality adjustment.

*This is of course larger than the target of 62.0 lakh tonnes for white sugar only reported in the Chapter on Industry and Minerals.

This last solution is most acceptable because an escalation of the share of the open-pan sector in total sugar production from 20 per cent to 24 per cent in five years appears to be very realistic. It should be difficult for khandsari units to supply half or three-fourths of the total additional demand for sugar. But even with a 38 per cent OPS share in the additional output, the total sugar sector would be generating an employment of 371 lakh additional mandays. If the whole additional output is produced in VPS mills the additional employment would be 163 lakh mandays only. Thus the net employment gain is 208 lakh mandays. The net capital saving would be Rs. 133 crores, for the solution requires an investment of Rs. 576 crores, whereas the VPS mills would require Rs. 709 crores to produce the whole extra output. The white sugar consumers will of course have to pay a higher price for their quality preference.

Table 4.20 : Implications of new Capacity Allocation between white and khandsari sugar

Sl. No.	Head	Unit	Amount
(0)	(1)	(2)	(3)
1.	Additional output required (white and khandsari Sugar combined) . .	(Lakh tonnes)	16.3
2.	Proposed Share of White Sugar. .	(Per cent)	62
3.	Proposed Share of Khandsari . .	(Per cent)	38
4.	Additional Employment Generated .	(Lakh Mandays)	208
5.	Capital Saved	(Rs. crores)	133

Recommendations

Existing and sanctioned capacity is sufficient for the required additional output in the VPS sugar mill sector. Therefore additional capacity need not be sanctioned in the VPS sector in the next five years. In order to meet the demand for sweeting agents above the likely VPS sugar output, the Khadi and Village Industries Commission should be advised to expand khandsari capacity so as to generate additional khandsari output of the order of 6.3 lakh tonnes. Since additional khandsari capacity of this order would require the establishment of as many as 1158 new units in the next five years, it will clearly be necessary to expand the capacity of the AIKVI Commission, and use the services of the small industry extension system and of the private consultancy sector, to accelerate the establishment of new khandsari units.

This policy will have to be backed up by some adjustment of the present differential excise policy. The existing differential already gives the khandsari units an advantage. But in order to protect them against the taste preference handicap the excise differential will have to be increased to some extent. The Commission will make specific recommendations in this regard to the Ministries of Industry and Finance.

The justification for the recommended policy is that 4 per cent extra production cost per tonne (without a quality adjustment) and a 26 per cent cost difference (inclusive of quality adjustment) are not excessive if 208 lakh extra mandays of employment are created and Rs. 133 crores of investment are saved.

Technological research should be urgently concentrated on improving the quality of khandsari sugar and raising the recovery rate from 6.8 per cent to 7.5 per cent. This would require specific funding for research in OPS technology in the science and technology plan. Technical improvements can help the khandsari units reduce the cost of production and meet the preferences of consumers. With these improvements OPS units can become cost effective and may not require any protection relative to new VPS units.

Chapter 5

A revised Minimum Needs Programme

This chapter redefines the norms of nine items of minimum needs which were determined for the Fifth Plan. The items are : (1) elementary education, (2) adult education, (3) rural health, (4) rural water supply, (5) rural roads, (6) rural electrification, (7) houses for landless rural labour households, (8) environmental improvement of urban slums, and (9) nutrition programme.

5.2 The programme based on upgraded norms is designated the "Revised Minimum Needs Programme" (RMNP). This programme is intended to fulfil the promise of providing essential infrastructure and social services, which the public sector alone can supply, to the weaker sections of the population, particularly in the rural areas. Because of its high construction component it will also create substantial additional employment for unskilled labour. In the proposed RMNP the elementary education, adult education and nutrition programme relate to urban as well as rural areas. The programme for the environmental improvement of slums relates to urban areas. All other programmes are designed to cater only to rural needs. Urban needs in these sectors are proposed to be covered under general sectoral plans.

5.3 The targets implied by the revised norms are assumed to be achieved over a ten-year period ending 1988, except in the rural water supply sector where all left-over problem villages identified in the past are to be covered within the next five years. The general phasing proposed is that approximately 40 per cent of the total targets for the next decade be achieved by 1982-83, except in sectors where a special phasing is called for.

The Revised Norms

5.4 Table 1 shows, side by side, the norms adopted for the Fifth Plan and the revised norms now proposed.

Table 1: Fifth Plan and Revised Minimum Needs Norms

Head	Fifth Plan Norms	Revised Norms Achievable by 1988
(1)	(2)	(3)
Elementary education	Coverage of 97% of children in age-group 6-11 and 47% of childen in age-group 11-14.	100% coverage of children in age-group 6-14 (90% coverage by 1983) Half of additional enrolment in the non-formal system.
Adult education	——	Coverage of all adults in age-group 15-35. Coverage in next five years to be determined on the basis of field experience and suitably enlarged.
Rural health	Establishment of one PHC per each community development block. Establishment of one sub-centre for every 10,000 population. provision of drugs @ Rs. 12,000 per annum for each PHC and Rs. 2,000 per annum for each sub-centre.	Establishment of one PHC for every 50,000 population and one sub-centre for every 5,000 population. One community health worker in each village.
Rural water supply	Coverage of all the problem villages.	Coverage of all leftover problem villages by 1983.
Rural roads	Linking up of all villages with a population of 1,500 or more.	Linking up of all villages with a population of 1,000 or more.
Rural electrification	Assistance to only those States which have not achieved 40% coverage by the end of the Fourth Plan	Coverage of 50% of villages in each State and Union Territory.
Sites and other help for housing landless rural labour households.	Provision of nearly 4 million house-sites.	Provision of housing assistance to all rural landless labour households.
Environmental improvement of urban slums	Financial assistance to States for (a) Expansion of water supply, (b) sewerage, (c) paving of streets and (d) provision of community latrines in slum areas which are not likely to be cleared within next 10 years, but are amenable to improvement. The scheme will be extended to all towns with a population of 3 lakhs and above. Where a town of this size does not exist one town from each such State would be covered. Areas inhabited by scheduled castes, particularly scavengers etc. should be given due priority.	Environmental improvement comprehending (a) expansion of water supply, (b) sewerage, (c) paving of streets and (d) provision of community latrines in slum areas. Areas inhabited by scheduled castes, particularly scavengers etc. should be given due priority.
Nutrition	1. Mid-day meals for children in age-group 6-11 years. 2. Supplementary feeding programme for children in the age-group 0-6, pregnant women and lactating mothers in tribal areas, urban slums and chronically drought prone areas.	1. Mid-day meals for one fourth of children in age-group 6-11 years. 2. Supplementary feeding programme for undernourished children in the age-group 0-6, pregnant women and nursing mothers in blocks with high concentration of scheduled castes and tribes.

Elementary Education

5.5 The government is committed to a more determined effort of the universalisation of elementary education for all children up to the age of 14. With this commitment in view it is envisaged that all children between the ages of 6 and 14 should be in schools by the end of the next decade.

5.6 The school-going population (between the ages 6 and 14) in 1988 is projected to be 72 million higher than the current enrolment. Normally, only about 97 per cent coverage of the age-group is feasible, but complete coverage is assumed to allow for underage or overage entrants. The additional teacher requirement for handling this enrolment has been worked out on the basis of a teacher-pupil ratio of 1 : 46. With the revised ratio, the absolute additional teacher requirement would be 1.59 lakh during 1978-83 and 1.98 lakh during 1983-88. Half of the additional enrolment is anticipated to be given schooling in the formal system while the other half is to be provided for through the non-formal system. The total cost of employing the teachers has been computed on the basis of a unit cost of Rs. 5,300 per annum in the formal system. The non-teacher cost is about 25 per cent of teacher cost shared equally between the cost of accommodation and other non-teacher costs. In non-formal education the per pupil cost is taken as Rs. 70 per annum. The total outlay, thus calculated, amounts to Rs. 900 crores for the forthcoming five years (1978-83).

Adult Education

5.7 Along with the universalisation of elementary education it is essential to remedy the education deprivation of the adult population to enable them to develop their full potentialities and play on active role in economic, social and cultural progress.

5.8 The Ministry of Education and Social Welfare has recently spelt out the basic policy for adult education in the National Adult Education Programme. The central long-term objective of the programme is to create a situation in which the poor do not remain passive spectators but become active and intelligent participants of the development process.

5.9 The removal of adult illiteracy should, of course, receive the highest priority in the programme. But the functional upgradation of neoliterates should also be given due importance. The content of education must be relevant to the learners' needs and environment. This means that the curriculum and teaching and learning methods and materials should be highly diversified, and arrangements regarding the timing, duration, and location of instruction should be sufficiently flexible to suit the situation of different groups of adults.

5.10 Under the adult literacy drive a variety of prorgammes may be designed to impart literacy with assured followup, conventional functional literacy, functional literacy in support of a dominant development programme, literacy and learning in action groups, and literacy for conscientization and the formation of the organisations of the poor.

5.11 As regards the implementation of the programme, it is proposed that the main responsibility be borne by State Governments. But they should secure the maximum help of voluntary agencies, yuvak kendras, universities and employees of various categories in existing institutions, wherever such groups are available to undertake adult education work. The role of the government would primarily be to coordinate it. The precise tasks which different non-official or semi-official agencies take up will have to be defined according to their respective capacity. Where the voluntary sector is weak or non-existing the government will have to carry the entire responsibility for the programme.

5.12 In the beginning the programme would be concentrated in a few selected blocks and then extended. It is proposed to review financial allocations, on the basis of concurrent evaluation.

5.13 Among the categories of persons who would engage in actual teaching, the following are obviously the most important :

(1) school teachers,

(2) students,

(3) village youth,

(4) ex-servicemen and retired personnel,

(5) government functionaries, and

(6) social workers, including education women.

The intention is that part-time contribution of all these categories of persons should be mobilised on a voluntary basis, but they should all receive an honorarium of Rs. 50 month for their contribution.

5.14 *School Teachers* : Past experience with the mobilisation of school teachers for adult education has not always been satisfactory. In view of this experience, it would not be desirable to make adult education work an essential part of the duties of school teachers, at least in the beginning. Their participation should be kept entirely voluntary. Teachers who can be expected to be genuinely committed to adult education work can be selected out of those who volunteer for it. Teacher-involvement can be facilitated if the support of their professional organisations is secured.

5.15 *Students* : As a part of the National Service Scheme, suitably modified, as well as outside the Scheme, it is proposed that students and teachers in institutions of higher education should also be invited to contribute to adult education work on a voluntary basis. University authorities and the organisations of teachers and students will have to be persuaded to create an atmosphere in which adult education work is undertaken by them willingly as a national service.

5.16 *Village Youth* : There are a large number of unemployed or underemployed youth in the villages with some education who can be entrusted with responsibility for adult education after they are given some training and reorientation.

5.17 The involvement of educated rural youth in the programme will accelerate the programme and at the same time reduce rural under-employment and create a new rural leadership.

5.18 *Ex-Servicemen and Retired Personnel* : Retired persons do need some supplementation of their meagre pensions and other income, and also some meaningful work to keep them busy. After careful selection and reorientation they can also be invited to participate in the adult education programme.

5.19 *Government Field Functionaries* : Official health workers, gram sevikas and bal sevikas and office-bearers of cooperative societies and village panchayats can also undertake some adult education work in their spare time, if any.

5.20 *Social Workers* : There are a large number of persons, particularly in the urban areas, who are willing to contribute to social work. They can be enabled to participate in adult education activity under special arrangements.

5.21 The estimated number of adults to be covered by the programme over the next decade is 100 million.

5.22 The programme has been costed on the assumption of a unit cost of Rs. 70 for making a learner literate. The figure is based on the report of a group of experts of the Planning Commission and the Ministry of Education. It includes the cost of honoraria and stipends to be paid to instructors, supervision, learning materials to be supplied free to learners, and teaching materials and equipment needed for every centre. A 10 per cent extra provision is necessary to cover administrative expense and expenditure on research, evaluation and followup. Another 20 per cent escalation is necessary to provide for the continuing education of neoliterates. On these assumptions the total cost of the adult education programme, over the coming five year period, amounts to Rs. 200 crores.

Rural Health

5.23 Currently a Primary Health Centre (PHC) serves a population of 1 lakh and a Sub-Centre (SC) serves 10 thousand. The revised norms suggested are : one PHC for 50 thousand persons and one SC for 5 thousand persons.

5.24 During the Five Year Plan 1978—83, 30 additional PHCs and 5,000 additional SCs will have to be established to fulfil the current norms. Besides, 33,000 more SCs will be needed to achieve the new norm of one SC per 5000 of population by 1988.

5.25 During the subsequent five years (1983—1988) 6211 PHCs will be required to achive the norm of one PHC per 50,000 population by 1988. Moreover 40550 SCs will have to be established, during 1983—1988, to achieve the desired norms by 1988.

5.26 Upgradation of 400 PHC into 30 bedded rural hospitals is also envisaged for 1978—83. The upgradation targets for 1983—88 is 2000 PHC.

5.27 The widening coverage of the system is expected to increase per capita availability of drugs. It is important to note here that though drugs on the approved list of the Ministry of Health are supposed to be supplied free to all patients irrespective of their economic status, and consultation, prescription, home visits and referrals to higher-level hospitals are also supposed to be free many difficulties are faced by low-income households in getting the full benefit of the health system.

5.28 The system must be reformed to ensure that it caters mainly to the low-income population, and the upper middle and high income households rely mainly on the private sector. The medical associations can play a critical role in generating greater empathy for the poor among their members. The health system will be strenghtened by the Health Ministry's new Community Health Workers Scheme. The basic idea underlying the Health Ministry scheme to deploy paramedical staff on a large scale is highly commendable because (a) it will mobilise personnel rooted in village communities for elementary health assistance to the people after a brief training, (b) it can quickly cover a large population in respect of elementary medical aid, (c) it can also spread some knowledge of preventive health care among the population, and (d) it can lower the per capita cost of medical service in the long run. The cost of all the above programmes works cut to Rs. 490 crores for the next five years.

Rural Water Supply

5.29 In a survey conducted in 1972-73, 1.52 lakh villages were identified as problem villages in respect of the availability of safe drinking water. They were categorised as follows :—

1. Those which did not have an assured source of drinking water within a reasonable distance (say 1.6 km.)	90,656
2. Those where the source of water supply is susceptible to water borne diseases like cholera and guinea worms	37,041
3. Those which suffer from excessive salinity, iron or flourides	24,778
	1,52,475

5.30 The on-going rural water supply schemes would have covered 95,653 villages out of the above 1.52 lakh villages by 1-4-1978 and 56,822 would remain to be covered. Subsequent to the last survey the State Governments identified some additional villages as problem villages. Taking these villages into account the total number of problem villages to be covered will be 1.03 lakh. All these villages are to be provided safe drinking water during 1978—83. The cost of providing safe water per village ranges widely from Rs. 5,200 in West Bengal to as much as Rs. 7.85 lakhs in Mizoram. On the basis of the per village cost in each State, the total cost of covering the remaining problem villages, in the coming five years would be Rs. 675, crores.

Rural Roads

5.31 According to the old MNP norm all villages with a population of 1500 or more were to have a road link. It is estimated that on the basis of this target 76300 km. of rural roads would remain to be constructed as on 1st April, 1977.

5.32 It is now proposed to provide a road link for all villages with a population of 1000 and above by 1988. This norm would require 25690 additional

villages to be covered, and 77094 km. of road-length to be built at the rate of 3 km. per village. This distance coefficient is higher than the previous one (about 2 km.) because smaller villages are more dispersed. In the selection of rural roads to be built or improved priority would be given to roads linking villages to the nearest mandi towns.

5.33 The total road length requiring construction by 1988 would be 153394 km. It is assumed that half of this length would be black-topped. The total outlay in the five year plan is Rs. 800 crores.

Rural Electrification

5.34 As on 1st October, 1977, nearly 36 per cent of Indian villages had been electrified. But the coverage varies widely from 3.9 per cent in Mizoram to 100 per cent in Punjab, Haryana and a few other areas. Under the Revised Minimum Needs Programme it is proposed that by 1988 at least 50 per cent of villages should be electrified in every State and Union Territory so that inter-regional disparities in coverage are reduced.

5.35 This revised target would require the electrification of another 1,02,698 villages. Using the cost-coefficient of Rs. 60,000 per village, the total outlay required would be Rs. 250 crores over the next five years.

Housing for Landless Labour Households

5.36 Under any minimum needs programme only the housing needs of the poorest sections of the rural popuing needs of the poorest sections of the rural population, namely, landless rural workers, can be covered. It is estimated on the basis of the latest available National Sample Survey data that 17 million rural labour households without land need housing assistance. The rate of assistance for site development and/or a part of repairs or works is assumed to be Rs. 750 per household. On this basis the total outlay, for the five year period 1978—83, works out to be Rs. 500 crores. This programme is to be given high priority.

5.37 *Environmental Improvement of Urban Slums* : Of the urban population nearly a fifth is estimated to constitute the slum population. Thus the estimated slum population, in 1988, needing attention will be around 36 million. Of this only 5 million have been covered so far by some schemes.

5.38 The proposed environment improvement programme (EIP) is to include (a) water supply, (b) sewerage, (c) the paving of streets and (d) the provision of community latrines. Areas inhabited by scheduled castes, particularly scavengers etc., are to be given due priority.

5.39 The average cost of providing these facilities for environment improvement is estimated to cost Rs. 150 per head of the slum population. For covering 13 million slum dwellers, the total outlay for the five year period will be Rs. 190 crores.

5.40 *Nutrition Programme*: The nutrition programme covers two schemes viz., supplementary nutrition and mid-day meals. Supplementary nutrition is designed for pre-school children (of less than 6 years of age) and expectant and nursing mothers belonging to the weaker sections of the society. The mid-day meals programme is meant for school-going children between ages 6 and 11. The mid-day meals programme attracts children to the school and proves useful in reducing dropouts.

5.41 Under the programme the ten-year target of coverage for the under-nourished school-going children, belonging to the weaker sections of the society, will be a fourth of the total number. Thus 25 million children will have to be covered. The minimum provision for mid-day meals is about 300 calories and 15 grams of protein per child per day for about 200 days in a year. At present the coverage is nearly 13 million. This is likely to increase by 4 million in the next five years.

5.42 Under the supplementary nutrition programme blocks with a high concentration of scheduled castes and scheduled tribes are proposed to be covered. The programme envisages giving supplementary nutrition at least to the extent of 200 to 300 calories and 8 to 12 grams of protein per pre-school child per day for about 300 days in a year and about 500 calories and 25 grams of protein per mother per day for about 300 days in a year. The present coverage of the supplementary programme is about 6 million children and mothers. In the next five years about one-fourth of blocks with a high concentration of scheduled castes and scheduled tribes (about 514 in all) are proposed to be covered by the Special Nutrition Programme (SNP) component of the Integrated Child Development Services Scheme. In addition the SNP will cover 1 million children and nursing mothers during 1978-83.

5.43 The total cost of both the mid-day meals programme and the supplementary nutrition programme is estimated to be Rs. 174.5 crores during 1978-83. This amount excludes the coverage of programmes operated with foreign assistance.

Summary

5.44 The aggregate outlay required for the nine items of the Revised Minimum Needs Programme over five years ending 1982-83 and in the last year (1982-83) is shown in Table 2. Of the sum of Rs. 1087 crores to be spent in 1982-83, the fixed investment component is estimated to be Rs. 652 crores (at 1976-77 Prices) and construction wage component as Rs. 140 crores.

Table 2: Estimated Outlays for the Revised Minimum Needs Programme in 1982-83 and over Five Years Ending 1982-83

Programme	Estimated Outlay During 1978-83	Estimated Outlay in 1982-83
(1)	(2)	(3)
		(Rs. crores)
1. Elementary Education	900.0	234.0
2. Adult Education	200.0	52.0
3. Rural Health	490.0	127.4
4. Rural Water Supply	675.0	175.5
5. Rural Roads	800.0	208.0
6. Rural Electrification	250.0	65.0
7. Housing for Rural Landless Labour Households	500.0	130.0
8. Environmental Improvement of Urban Slums	190.0	49.4
9. Nutrition Programme	174.5	45.4
TOTAL	4179.5	1086.7

Chapter 6

Development of Backward Areas

Ever since the inception of planning the need for special measures to raise the level of development in backward areas has been recognised. During the first decade of planning the problem of backward areas was tackled largely through the device of scarcity relief works which could not take account of all backward areas. Moreover, for lack of a plan or a strategy the effort was often infructuous. However, even during this period the need to take backwardness into account in location decisions and the possible role of special programmes for backward areas development was recognised. These two elements received greater emphasis in later plans. As a result incentive schemes for attracting industrial investments to backward areas as well as special programmes were elaborated in later plans.

The Nature of Backwardness

6.2 There is no single definition of backwardness that underlies all existing programmes. Due to the lack of data on levels of living at the required level of detail, an indication of the nature and spread of backwardness has to be obtained from measures reflecting agricultural and industrial productivity, the degree of commercialisation, levels of social development, the availability of infrastructures etc.

6.3 Some data relevant for determining the prevalence of backwardness and its causes is presented in the Annexure. Though a definitive categorisation of regions in terms of all these factors is not available, the following types of problem areas seem to exist.

(i) *High population density areas in the Gangetic Plain*

These areas have high potential for agricultural production which is not fully utilised so that agricultural yield rates tend to be rather low. The level of infrastructure availability is also quite low. Some of them manifest signs of debt bondage with a substantial proportion of debt being owed to landlords and agricultural moneylenders. Their problems stem partly from the severe pressure on land and partly from outmoded tenurial relations.

(ii) *Areas with exceptionally low agricultural productivity*

These are found mostly in central and western India much of which falls within the drought belt. The severity of the problem posed by this would vary with the density of population and opportunities for non-agricultural employment.

(iii) *Tribal Areas*

Most of these fall within two compact blocks—one in the north eastern part of the country and the other in central and eastern India. In the north-eastern areas the problems are largely locational and social. In the other parts there is a certain dualism in the economic structure whereby enclaves of modern industry exist in a backward rural environment. Some of these areas show high levels of unemployment.

(iv) *Ecological problem area* :

These are areas that face some special ecological problems that limit the scope for economic development or necessitate high costs for the provisions of basic facilities. Desert areas and hill areas are typical examples.

6.4 The categorisation presented above is not definitive. There is substantial variation in conditions within each state. There are isolated districts or clumps of districts in areas not categorised as 'backward' in the previous paragraph. There are also areas of high unemployment, particularly in the South which appear to be well developed as far as infrastructure, agricultural productivity per hectare or occupational structure are concerned. It is intended that a systematic study of the problem will be made not merely for purposes of classification but to identify viable development strategies.

Evaluation of Fifth Plan Approach

6.5 Some of the measures used at present to promote backward area development are described below :

(i) Backwardness, defined in terms of per capita income being below the national average is one of the criteria for determining the distribution of central assistance to the States. At present, according to the Gadgil Formula, 10 per cent of the total central assistance is allocated on this basis. A further amount is allocated to meet special problems of desert areas.

(ii) The allocation of central assistance to some backard states like Jammu and Kashmir and the N.E. States is outside the formula and is given more liberally.

(iii) The Central Government provides funds to the N. E. Council for schemes which are of interstate importance in the N. E. region. The total expenditure on this account during the Fifth Plan period was Rs. 56 crores.

(iv) There are specific plan schemes to provide additional central funds for mitigating the problems of certain types of areas with special ecological or social problems. These are the schemes for hill areas, tribal areas and drought prone areas. Certain other schemes of rural development directed towards improving the conditions of target groups like small

farmers and agricultural labourers also tend to be located in backward areas. The allocations of central assistance and state plan outlays under these schemes during the four years of the Fifth Plan are presented in Table 1. The total outlay on these schemes was Rs. 1490 crores in the Fifth Plan period, of which Rs. 645 crores was in the central plan. Hill and tribal area schemes cover large blocks of territory and are based on an integrated plan that includes both state plan and central assistance based outlays. Even with some of the other rural development programmes, an attempt has been made to evolve an integrated area approach. The impact of these programmes on the areas covered has yet to be assessed since they have not been in operation for very long.

(v) The Central Government gives a subsidy for industrial investment in specified backward districts/areas. It also gives a transport subsidy to industrial units located in some areas which have an exceptionally high transport disadvantage. The total amount disbursed on account of the investment subsidy amounted to Rs. 36 crores upto the end of January, 1977. At present the benefits from this subsidy are concentrated in a few districts/areas. Moreover no attempt is made to discriminate in favour of the sorts of industries that could have a major impact on the district/area in terms of employment or resources development or forward linkages. For instance, the amounts given as subsidy are not related to employment but to capital investment. The extent to which the subsidy has helped to promote the overall level of development in backward areas has yet to be assessed.

(vi) Term lending institutions operate a scheme of concessional finance and re-finance for industrial projects in specified backward districts/areas. The total amount of concessional finance (inclusive of re-finance) sanctioned by IDBI, IFCI and ICICI for units in specified backward districts amounted to Rs. 273.99 crores in 1976-77. The share of assistance (concessional and non-concessional) sanctioned to units in backward areas was 45 per cent in 1976-77. The entire amount indicated above cannot be considered to be a grant for backward area development. Since the interest differential in favour of backward districts is around 1.5 to 3.0 per cent the grant component assuming a 15 year repayment period and five years grace, would amount to about Rs. 32 crores in 1976-77. As in the case of the investment subsidy the benefits have accrued to a small propotion of the districts covered. This scheme too is not selective with respect to industries and subsidises capital rather than labour. A full assessment of its impact on development has yet to be made.

(vii) Apart from (iv) and (v) the States themselves have several schemes for channeling industrial investments to backward areas. In 1976-77 more than half the assistance sanctioned by SFCs, SIDCs and SIICs went to districts designated backward for the concessional finance schemes. Since there is some competition between States in the provision of incentives, the efficiency of any of these is to some extent neutralised by the others.

6.6 Per capita outlays under the tribal sub-plan amounted to roughly Rs. 80 in 1977-78. However tribal sub-plans are not comprehensive and some outlays in the State sector that benefit the region concerned are not included in the sub-plan. Hence the figures for total State Plan outlays in the area would be somewht higher. The outlays under the special programmes for hill areas for the same year are substantially higher, the average being around Rs. 176 per capita. This high figure is due to the heavy cost of infrastructural facilities in hilly terrain. Per capita outlays are also high in Jammu and Kashmir and the N.E. States, which are provided with Central assistance on an ad hoc basis. All these figures may be compared with the all-India outlay of Rs. 90 per capita in the State plans for 1977-78. The proportion of these outlays that come from Central assistance varies according to the nature of the problem. In the case of tribal sub-plans, the proportion is around 25 per cent. In the drought prone areas programme and hill area plans, the share of special assistance is roughly 50 per cent.

Approach to Development

6.7 The approach to backward area development hitherto has been characterised by wide ranging and non-selective incentives for industrial investment on the one hand and special programmes, some of them with an area development approach, on the other.

6.8 Organised industry, which tends to be capital intensive is not necessarily the sort of growth catalyst that backward areas need. Our experience with large industrial projects in backward areas shows that their spread effects are low and the surrounding areas continue to remain poor and underdeveloped. In fact such development by creating a dualistic-economic structure may pose more problems that it solves. These arguments are applicable not merely to large public sector projects but also to modern private sector industry. Industrialisation can play an important role in some backward regions, particularly those that are densely populated and have few opportunities for traditional non-agricultural occupations. There is also the need to increase the geographical dispersal of industry to avoid problems of pollution and congestion in big cities. But the promotion of industry as a tool for the development of backward areas requires a degree of selectivity about the types of industries promoted and the areas chosen for such promotion. It is intended that incentive schemes to promote the industrialisation of backward areas be examined to assess their costs and effectiveness in promoting overall development in the areas concerned.

6.9 There are some backward areas which are not drought prone or hilly or inhabitated largely by scheduled tribes and hence are beyond the reach of most of the area development measures included in Fifth Plan. Special programmes directed towards specific problems or target groups are also inadequate for their needs. Moreover, the barriers to development in backward regions are such that an integrated approach is required. Such an integrated approach underlies the proposals for rural development in this Plan. The proposed provision for integrated rural development, area planning and minimum needs is for all areas in the country. However, it is expected that backward areas, however defined, will be amongst the principal beneficiaries from these provisions and this factor will be taken into account in the allocation of funds.

6.10 Problems of backwardness cannot always be tackled at village, block or district level. There are some barriers to development that affect a whole region within a State and would not be amenable to the sorts of programmes that would emerge from village, block or district plans. At the same time they may be necessary to realise the full potential of these local level programmes. Some examples of such regionally oriented investments are as follows :—

(i) Investment in major bridges, roads, marketing facilities or communication that could open upon an area, make commercial agriculture profitable and possibly help to stimulate non-agricultural job opportunities ;

(ii) Investments in labour training which would be of particular importance in areas where a substantial change in the occupational structure is required ;

(iii) Encouragement of rural banks, credit co-operatives and other institutions to improve the credit network and reduce exploitation;

(iv) Support for land reforms and other programmes of institutional change ;

(v) Support for administrative changes designed to improve capabilities for plan formulation and implementation.

6.11 It is intended that some part of the provision for integrated rural development and area planning will be used to promote those measures that will have a leavening effect and enable the region to benefit fully from the other sectoral and area programmes and to utilise fruitfully investment funds in the private and banking sector.

6.12 The outlay provided in the Fifth Plan for area development schemes and the central investment subsidy scheme is shown in Table 1. For the period 1978-79 to 1982-83 the provision in the Plan for area development schemes including hill and tribal area plans and NEC outlays is Rs. 2800 crores. The entire outlay under area development will not be spent in backward areas. However, it is intended that priorities be determined in such a way that a substantial proportion will in fact contribute towards the alleviation of extreme backwardness, poverty and unemployment. The provision of special Central assistance under these heads will be used so as to ensure adequate attention to the areas concerned in the State Plans and to promote planned development at all levels within the state.

Table I: Outlays on Programmes Relevant for Backward Area Development

Sl. No.	Fifth Plan Expenditure 1974-75 to 1977-78		
	States	Centre	Total
(1)	(2)	(3)	(4)
			(Rs. crores)
1. Integrated Rural Development	166.31	330.17	496.48
2. Hill area . . .	119.94	116.81	236.75
3. Tribal Areas . . .	558.33	198.33	756.66
4. North Eastern Council .	..	55.98	55.98
5. Central Investment Subsidy Schemes . . .	..	35.66	35.66

Note : Actuals for 1974-75 to 1976-77, anticipated for 1977-78 except item 5 for which actuals upto 31st January, 1977 have been taken.

ANNEXURE

Selected Data for Sub-Region

Region	Density of rural population 1971	%age of urban population to total population 1971	%age of Literacy 1971	%age of Scheduled Tribe 1971	%age of Scheduled Caste 1971	%age of Ag. Lab. to Ag. workers 1971	%age of workers in house hold & non-house hold Mfg. 1971	%age of area irrigated 1968-69
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ALL INDIA	139	19.91	29.45	6.93	14.59	37.79	9.46	21.17
Andhra Pradesh								
Coastal	174	19.12	27.74	5.20	11.16	59.38	8.52	48.94
Inland Northern	110	21.00	20.71	2.80	15.81	48.18	10.43	16.57
Inland Southern	97	16.45	24.40	2.40	13.47	53.16	7.43	18.89
Assam								
Plains	205	8.99	28.39	9.49	6.37	15.45	4.24	21.54
Hills	20	6.75	34.56	73.11	1.36	3.79	1.07	10.08
Bihar								
Southern	153	16.01	20.39	32.12	9.93	32.39	7.15	8.68
Northern	469	4.99	16.91	0.79	13.91	52.39	3.24	14.62
Central	359	11.98	23.67	0.96	17.69	51.24	5.83	41.76
Haryana								
Eastern	223	19.44	29.08	0.00	18.36	26.77	11.58	44.44
Western	148	14.29	22.75	0.00	19.90	21.89	7.05	47.89
Himachal Pradesh	58	6.99	31.96	4.09	22.24	5.58	4.18	17.07
Jammu & Kashmir								
Mountainous	138	21.50	22.96	0.00	26.76	9.06	7.58	27.62
Outer Hills	9	6.65	14.48	0.00	9.51	1.98	2.53	15.83
Jhelum Valley	120	23.14	16.69	0.00	0.01	4.69	8.71	57.33
Karnataka								
Coastal & Ghats	122	19.50	42.60	2.36	4.83	41.87	17.09	26.63
Inland Eastern	101	17.92	35.19	1.30	14.54	32.98	6.26	27.08
Inland Southern	155	31.39	32.01	0.38	16.78	27.63	11.54	22.29
Inland Northern	105	21.81	27.86	0.63	11.84	48.71	8.78	7.96
Kerala								
Northern	402	15.29	52.15	2.62	6.06	68.60	13.12	n.a.
Southern	538	16.81	65.39	0.45	9.65	59.35	17.36	n.a
Madhya Pradesh								
Eastern	79	10.11	20.67	28.20	10.61	31.92	5.22	10.84
Inland Eastern	81	14.97	21.16	27.68	9.49	39.22	7.05	2.05
Inland Western	71	19.88	25.02	12.17	15.53	42.25	8.43	2.66
Western	85	22.96	23.68	18.92	13.59	32.36	8.00	4.71
Northern	81	16.62	20.67	4.05	19.54	19.90	5.66	14.18
Maharashtra								
Coastal	150	61.86	51.96	6.37	2.65	25.23	27.76	2.93
Inland Western	135	24.22	38.16	2.09	9.09	32.35	11.55	11.98
Inland Northern	118	23.86	38.19	21.16	3.99	51.29	8.19	9.57
Inland Central	109	14.71	25.86	1.71	9.52	48.50	4.65	5.65
Inland Eastern	97	28.87	39.90	3.28	4.32	66.24	7.16	2.32
Eastern	83	10.45	30.08	6.96	4.81	39.78	12.30	20.00

1 PC/78.—9.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Manipur								
Plains	112	17.40	34.64	7.32	2.08	9.14	17.27	n.a.
Hills	18	2.81	28.65	90.02	0.16	0.77	0.74	n.a.
Meghalaya	39	14.55	29.49	80.48	0.38	12.50	2.35	n.a.
Orissa								
Coastal	236	8.69	33.02	5.40	16.63	37.11	5.61	n.a.
Southern	72	6.36	13.07	45.51	15.44	36.36	3.69	n.a.
Northern	110	9.04	23.60	35.46	12.88	35.94	11.44	n.a.
Punjab								
Northern	257	25.43	38.43	0.00	25.54	33.01	14.27	67.21
Southern	165	21.32	26.88	0.00	23.53	31.14	7.40	76.56
Rajasthan								
Western	34	19.73	18.05	2.37	15.10	9.44	5.60	5.36
North-Eastern	97	18.86	20.36	7.95	18.50	13.52	7.60	30.76
Southern	98	10.61	15.89	44.34	7.52	11.55	5.03	24.13
South-Eastern	77	15.74	20.12	15.88	16.50	17.02	7.01	25.98
Tamil Nadu								
Coastal, Northern	266	37.46	40.11	0.89	21.07	48.75	13.36	52.43
Coastal, Southern	246	24.89	43.21	0.06	16.73	54.36	13.25	54.74
Inland	206	28.40	36.57	1.11	15.98	46.86	13.46	34.01
Tripura	134	10.43	30.98	28.95	12.39	26.84	3.52	n.a.
Uttar Pradesh								
Himalayan	64	14.69	31.02	3.68	16.05	6.47	3.66	30.46
Western	315	18.27	22.31	0.06	18.18	21.30	8.24	46.97
Central	288	17.42	22.86	0.13	26.94	18.63	7.34	24.73
Eastern	357	8.25	19.40	0.05	20.84	34.25	6.33	30.84
Southern	125	14.66	22.52	0.01	25.32	31.55	5.00	19.41
West Bengal								
Himalayan	279	11.28	25.06	13.88	34.43	20.74	4.28	12.45
Eastern Plains	419	9.91	23.45	5.26	19.78	43.87	7.19	16.54
Central Plains	493	42.23	41.29	2.27	18.44	55.00	22.94	29.92
Western Plains	318	7.77	29.42	10.56	17.07	44.21	5.71	31.07

NOTES :

1. Sub-regions within the State conforms to the definition of sub-regions by the NSS as reported in instructions to Field workers for NSS 27th round.

2. Data in Col. 9 for Orissa relates to the year 1966-67 and for Assam, H.P. & J.K. relates to the year 1967-68 and the rest to 1968-69.

3. Data in Col. 17 for West Bengal relates to year 1968 and for Kerala, U.P. and Bihar relates to year 1969.

4. Data in Col. 13 is a weighted average of the per capita consumption of the bottom 10 per cent (by size class of holdings) of cultivators and if non-cultivating rural labour households.

5. Data for Gujarat could not be presented because of the complex definition of NSS Sub-regions in that State.

Region	Agriculture output per hectare Average for 1970-71 to 1972-73 (Rs.)	Farm business investment cultivator household 1971-72 (Rs.)	Rural unemployment rate (mandays) 1972-73 (%)	Consumption standard of weaker sections in rural areas 1970-71 (Rs.)	% debt owned to landlords & Ag. money lenders (all rural house holds) 1971-72 (%)	Borrowing for house expenses as percentage of total borrowings (all rural households) 1971-72	Surfaced Roads miles /100 sq. kms. 1970-72	%age of villages electrified 1971
(1)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
ALL INDIA	27975	206	7.83	26.91	31.75	40.91	10	18.81
Andhra Pradesh								
Coastal	1632	132	12.79	30.27	49.59	37.05	16	27.18
Inland Northern	653	107	10.44	25.73	39.42	38.81	8	28.75
Inland Southern	1019	162	11.51	28.22	67.71	51.10	15	40.54
Assam								
Plains	1215	104	1.97	34.60	15.05	30.71	5	3.30
Hills	1524	133	0.99	38.57	5.35	76.27	1	0.15
Bihar								
Southern	866	45	8.24	21.37	29.99	48.05	5	3.40
Northern	967	77	9.45	24.44	69.34	60.93	8	8.77
Central	1079	91	13.55	22.56	61.39	50.84	8	24.49
Haryana								
Eastern	1373	730	2.72	38.91	33.74	35.68	19	100.00
Western	912	1001	3.05	30.43	41.73	31.71	15	100.00
Himachal Pradesh	n.a.	288	0.42	56.54	31.88	49.38	4	22.54
Jammu & Kashmir								
Mountainous	n.a.	175	1.00	32.05	4.59	36.44	20	n.a.
Outer Hills	n.a.	122	1.01	28.504	3.10	46.60	0	n.a.
Jhelum Valley	n.a.	163	16.81	40.88	0.66	63.17	16	n.a.
Karnataka								
Coastal & Ghats	1666	524	5.23	34.85	7.34	17.28	20	27.22
Inland Eastern	1582	785	5.60	28.94	29.17	37.64	27	27.98
Inland Southern	1409	284	8.08	24.38	49.20	47.28	31	35.42
Inland Northern	714	282	11.03	27.62	43.22	47.91	14	30.17
Kerala								
Northern	1736	97	21.89	32.88	9.31	41.96	23	59.91
Southern	1800	134	24.97	27.05	10.33	30.97	39	93.84
Madhya Pradesh								
Eastern	897	189	2.42	25.85	29.18	29.31	4	10.88
Inland Eastern	592	107	3.23	21 14	32.68	48.07	8	8.00
Inland Western	618	345	4.05	29.76	25.79	40.48	6	9.58
Western	628	311	6.26	27.83	23.71	41.79	8	12.15
Northern	674	247	1.98	26.39	18.89	49.20	7	6.90
Maharashtra								
Coastal	1345	190	6.01	37.09	14.77	42.18	25	38.32
Inland Western	632	205	8.81	27.64	10.53	21.27	14	41.77
Inland Northern	496	261	14.55	23.78	6.29	18.71	11	35.35
Inland Central	293	271	7.13	25.49	8.74	18.83	11	3.24
Inland Eastern	398	296	11.53	26.35	5.19	13.46	14	34.61
Eastern	658	259	14.66	33.29	3.67	15.63	6	20.54

(1)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Manipur								
Plains	n a.	20	3.07	35.16	11.25	60.84	2	n.a.
Hills	n.a.	10	6.99	30.51	2.08	70.76	0	n.a.
Meghalaya	n.a.	6	1.77	36.04	5.20	51.98	1	n.a.
Orissa								
Coastal	1067	90	17.07	24.59	38.64	50.43	8	7.34
Southern	975	49	5.28	15.37	23.63	38.00	4	0.65
Northern	1011	75	10.72	20.10	23.87	42.59	5	3.06
Punjab								
Northern	1793	1647	6.25	44.66	22.32	36.30	32	56.13
Southern	1735	1086	2.02	44.44	29.81	42.54	24	43.93
Rajasthan								
Western	225	236	5.05	25.51	31.75	62.50	3	10.40
North-Eastern	684	369	3.21	30.08	32.14	60.33	10	10.67
Southern	776	98	1.10	16.44	11.95	54.90	9	5.53
South-Eastern	705	193	1.32	25.35	40.01	65.20	9	7.33
Tamil Nadu								
Coastal, Northern	2030	293	14.59	20.51	40.99	29.19	31	85.93
Coastal, Southern	1821	97	14.49	27.49	37.56	43.68	34	71.67
Inland	1563	233	9.50	24.27	43.05	31.38	37	78.29
Tripura	n.a.	71	5.94	32.44	11.22	54.23	0	n.a.
Uttar Pradesh								
Himalayan	1035	157	1.18	41.41	5.03	49.81	2	3.37
Western	1345	300	2.76	27.17	29.42	43.48	5	29.67
Central	1015	153	2.28	26.11	35.70	36.12	5	13.44
Eastern	928	125	4.56	25.08	40.49	50.71	4	19.02
Southern	721	213	3.28	23.65	31.12	44.48	4	9.53
West Bengal								
Himalayan	1323	42	7.80	30.32	32.59	53.91	17	13.54
Eastern Plains	1372	109	11.37	23.26	22.46	42.44	15	8.34
Central Plains	1609	176	9.63	23.48	12.77	51.59	26	15.45
Western Plains	1432	143	14.42	23.79	17.80	50.11	13	2.22

SOURCES :

(i) Statistical profile & Districts of India, Multilevel Planning Section, Planning Commission, Government of India, September 1974 for Cols. 2-9, 16 and 17.

(ii) All-India Debt & nvestment Survey, 1971-72. Department of Statistics, R. B. I. Bombay for Cols. 11, 14 and 15.

(iii) Centre for Regional Development, Jawaharlal Nehru University—PPD, Planning Commission, Project on Regional Levels of Agricultural Development in India for Col. 10.

(iv) NSS 27th Round for Col. 12.

(v) NSS 25th Round for Col. 13.

Chapter 7

Environmental Planning and Coordination

Concern for the quality of the human environment has, in recent times, emerged as an issue of global importance. Accelerated economic growth in the highly industrialised countries has had its environmental backlash effects, awareness of which, however, is a recent phenomenon. The growth ethic looked only to the immediate and monetary returns of economic activity and not at the social costs which it entailed. In the simple monetary cost-benefit calculus adopted, the environment was treated as free and plentiful resources the use of which neither involved costs nor led to its depletion. Effects of over-exploitation of environmental resources leading to pollution of air, water and land came to be accepted as an unavoidable feature of economic growth. As long as human numbers were limited and the capacity of the environment to withstand its over-utilisation was not stretched to a point of no return as it were, man neglected the environmental impact of economic activities. However, with the discovery of residues of toxic chemicals (including pesticides and detergents) in humans and animals, the increasing incidence of diseases attributable to man-made pollutants, and appearance of signs of irretrievable damage to natural life supporting systems like the soils, waters and the air, showing up for examples in problems of water-logging and salinisation accompanying irrigation projects, siltation of reservoirs etc. realisation began to dawn that human activities which impinge upon the natural environment, need to be carefully controlled. The natural environmental movement which started off as a reaction against industrial pollution assumed larger and varied dimensions covering the entire spectrum of factors that go to determine the 'quality of life' on this planet.

7.2. While the effects of environmental neglect first came to be perceived in the developed world, their experience is a pointer to developing countries like India. In our developmental efforts, we need not repeat the mistakes which marked the progress of the former. The pattern of growth that we adopt has to be imbued with the realisation that there are limits both in time and in space to the exploitation of the environmental resources.

7.3. The essence of environmental sound growth lies in a happy blend of the realisation of the physical outer limits to the exploitation of environmental resources and the inner limits to human needs and aspirations. The whole exercise of growth with social justice aims at providing the millions of this country with at least the bare minimum of these necessities consistent with human dignity. Environmental improvement in India has to be understood in this context. Environmental solution adopted elsewhere cannot be applied uncritically to the Indian conditions. The qualitative and quantitative aspects of the problems obtaining in India need to be fully understood and solutions tailored accordingly.

7.4. Considerable damage has already been done to our environment—soil salinity, desertification, over grazing of pasture land, denudation of forest areas leading to soil erosion and other ecological problems, pollution of rivers by industrial effluents, submergence of valuable forest land by dams. There is no time to be lost in taking effective steps to ensure that these and other threats to environment are effectively tackled. Commitment to environmental protection need not necessarily militate against development or *vice versa*. On the contrary the two are complementary to each other as many of our environmental problems are the manifestation of inadequate development; environmental improvement and development are synonymous to us in more ways than one.

7.5. Besides continued commitment of financial resources to programmes of housing and urban development, slum improvement, rural and urban water supply, soil conservation and afforestation, protection of wildlife and similar activities, several fresh initiatives have been taken in recent years to safeguard environmental quality. These range from legislative measures and a constitutional guarantee, to executive directions and creation of a high level multidisciplinary body of experts to advise the central and state governments and public authorities on the environmental implications of their development activities. Realising the need for a focal point in the structure of the government where environmental aspects may receive close attention in an integrated manner, the Government of India established the National Committee on Environmental Planning and Coordination (NCEPC) in 1972. To check the pollution of our rivers and watercourses, the "Central (Prevention and Control of Water Pollution) Act, 1974" was enacted. Under this act, a Central Board and State Boards have been constituted. The Water (Prevention and Control of Pollution) Cess Act, 1977 enables these boards to impose a cess on municipal authorities and specified industries. Legislation to control air pollution is on the anvil. To ensure that pollution abatement technology is incorporated in industrial units, applications for industrial licences are scrutinised from the pollution control angle. Article 48 A of the Constitution of India lays down that the State shall endeavour to protect and improve the environment. Endangered species of flora and fauna are protected under the Wild Life (Protection) Act, 1972. An All India project to conserve the tiger population is in full swing.

7.6. As industrial, power generation and other developmental activities have a significant bearing on the environment, procedures have been evolved for

referring project proposals involving substential investments to the NCEPC for appraisal from the environmental angle. Irrigation and power generation projects are thus invariably referred to the Committee for its clearance. The Committee's opinion is also sought on the siting of major industrial units like petrochemicals and fertiliser complexes, and on the technology to be adopted in these units for ensuring their pollution-free operation. Since it is easier to incorporate environmental considerations at the project planning stage itself than do it subsequently, steps have been taken by the NCEPC to issue guidelines to project planners. Guidelines in the form of a detailed questionnaire have been prepared for planning thermal power projects and are being followed by power generation authorities all over the country. Similar guidelines would be issued soon for irrigation and hydroelectric schemes, major forest exploitation schemes such as large scale monoculture and integrated paper plants, extractive industries like mining, process industries, road and railway projects. With these developments, the preparation of environmental impact statements would become obligatory on the part of project planner and these statements would be subject to scrutiny by the NCEPC and equivalent bodies which would be constituted at the State level before clearance is accorded to the project. If necessary, legislative measures for this purpose may have to be considered.

7.7. Besides scrutinising projects referred to it by the various departments of the Government, the NCEPC has, by virtue of its wide terms of reference, been looking into projects *suo moto,* and has been advising the concerned departments and authorities on the environmental implications of the projects. In this connection mention may be made of the successful intervention of the NCEPC to save the Mudumalai Wild Life Sanctuary in Tamil Nadu.

7.8. To provide inputs to regional development, task forces are set up by the NCEPC. A task force thus looked into the on-going and proposed schemes for development of the Western Ghats region and their impact on the local ecology. The recommendations of the task force have been referred to the concerned departments at the Centre and to the concerned State Governments.

7.9. To promote research into environmental and ecological problems, a number of research schemes have been funded by the NCEPC. These schemes cover air and water pollution, pesticide use, instrumentation for pollution measurements, patterns of energy consumption, waste utilisation, programmes for development of human settlements and the study of natural ecosystems like forests, lakes, rivers and mountain habitats. The research schemes on natural ecosystems form part of the Man and the Biosphere Programme, an international multi-disciplinary research effort initiated by the UNESCO. The data generated and the results achieved by all these research schemes would, besides being of interest to the scientific community, be also of use to planners, policy makers and administrators.

Chapter 8

Planning, Implementation, Monitoring and Evaluation

In view of the need for re-ordering plan priorities and restructuring investments accordingly, it was decided to terminate the Fifth Five-Year Plan one year in advance and begin a new Five-Year Plan commenceing from the 1st April, 1978. The new priorities and investment structure will call for far reaching changes both in regard to the planning process as well as in the machinery for implementing and monitoring the progress of the plan. In general, it is necessary that planning capabilities of the Central ministries and the various public sector corporations and the departments under them be strengthened. Special attention would be required to be paid to overhauling and professionalisation of the planning machinery at the State level in most of the State governments and integrating it more closely with the administrative decision making process. Most important of all, the plan will require creation of a full time professional planning machinery at the block and district level and will call for a great deal more of public participation, especially, the use of voluntary agencies.

Planning

8.2. Some of the specific major shortcomings of the planning process, which a close examination of the past planning process has revealed, are listed below:

(i) The successive Five Year Plans tended to assume higher levels of savings and investment in real terms, and consequently, a much higher rate of growth than was warranted by objective considerations. As a result, there has been a growing gap between plan projections and actual achievements in all sectors of economy;

(ii) The plans could not make any allowance for fluctuations in agricultural output within the plan, nor was there a machinery for adjustment of the plans to unforeseen external events. The consequence of both (i) and (ii) was that the Third, Fourth, and Fifth Five Year Plans were disrupted by inflationary crises and the unplanned cuts in developmental outlay necessitated thereby, resulted in disruption of plan priorities;

(iii) The planning process provided for one mid-term appraisal only and the corrections made in the course of such a review proved to be inadequate. Thus, if demand or supply in one sector did not develop according to anticipation, the necessary changes in other related sectors were not made adequately in time;

(iv) Towards the later part of the plan period in a fixed Five Year Plan the time horizon was too short for investment decisions in many sectors ;

(v) The plans were based on models which provided for theoretical inter-sectoral consistency for the terminal year of the 5 year period, and the likely imbalances that might arise from year to year were not provided for ;

(vi) Given the character of the mixed economy, planning of the large self-employed sector in agriculture, household industry and services was minimal. The private corporate sector could be given incentives or regulated, but targets were only indicative since firm production and investment plans were initiated by the sector itself. Some correction of targets is, therefore, inherent in the system. In addition, in the past there were major slippages even in the public sector plans where targets were set.

8.3. It has, therefore, been proposed to adopt the Rolling Plan system which will have the following features :

(i) Year to year targets will be set for sectoral outlays and output for major sectors within the Five Year Plans;

(ii) The horizon of the Five Year Plan will be extended by working out these selected sectoral targets for one additional year at the end of each year.

8.4. As far as major investment decisions are concerned, the Rolling Plan system will have the clear technical advantages of projections from a base level which is adjusted annually, continuous correction of errors and a constant time horizon for investment decisions. This will introduce a significant degree of realism and flexibility in the planning process and reduce the chronic and increasing shortfalls in targets and achievements observed in the past. The system will also be better adopted for coping with fluctuations and uncertainties.

8.5. There is no basis for the apprehensions expressed, that the introduction of a Rolling Plan system would mean abandoning long term objectives, reducing the commitment of the Central and the State governments to the mobilisation of the resources for development and freeing of implementing agencies from any accountability for non-achievement of targets. The

modifications proposed will not mean either the abandonment of perspective planning or the replacement of the discipline of five year framework by *ad hoc* annual decision making. A new 15 year perspective plan will be prepared for charting the longer term course of development of the economy as a whole, taking demographic factors into account. (Projections for 10 years are contained in this document). The perspective plan provides the framework for investment decisions in long gestation projects for which a five year horizon is inadequate and for planning for land use, water resources, oil and mineral development and manpower. Under the Rolling Plan, objectives and strategies would not be opened for annual review; nor would the resource raising efforts of the States and the Centre be allowed to slacken in periods of difficulty. On the contrary, with annual targets set out for 5 years ahead at any time, the monitoring of progress against these targets will be subject to stricter reviews. Only a minority of targets will be adjusted at any time of annual review, and that too only if such adjustment is warranted by unforeseen developments or where it is clearly established that a particular target is no longer achievable. Past experience shows that non-revision of a target does not mean that it will in fact be achieved. Also review may suggest upward revision of certain targets in growing sectors. Finally, it may be noted that in a system in which targets are given for each year of a five year plan on a continuous basis, scrutiny of the planning system can be more detailed.

8.6. The Rolling Plan system as envisaged above will not obviate the need for periodical stock taking of achievements and failures of the overall economy and Central and State Plans. These could conveniently be undertaken once every five years as now, although the system would permit of assessment and review at any time. The constitutional provision for financial devolution also requires periodic reallocation of resources between the Centre and the States, not less than once in five years. There would be an advantage in retaining the present five year span for this purpose to enable both the States and the Centre to do their resource planning.

8.7. The new concept would call for strengthening the planning machinery at the Centre and in the States. A number of steps have already been initiated for strengthening the planning, monitoring and evaluation functions, which are discussed in a subsequent section.

8.8. The distribution of unemployment and poverty and the potential for development of agriculture and related activities varies widely from region to region and also within regions. Sectoral allocation of resources and the elaboration of sector-wise development programmes and projects will therefore be inadequate for the attainment of the basic objectives in the next phase of planning, viz. eradication of unemployment and reduction of poverty and inequality. Unless development programmes can be made area-specific to a much greater extent than in the past, regional imbalances and intra-regional variations may even be accentuated in the process of development.

8.9. The objectives of planning at the area level have to be clarified at the outset. There will be some major investments as in basic industries and large scale irrigation, power, transport and other infrastructure net-works which are to be determined on the basis of national or regional priorities which must necessarily remain outside the scope of area planning. But the bulk of investments on agriculture, minor irrigation, animal husbandry, fishery, forestry, marketing or processing cottage and small scale industries and local infrastructure and social services including water supply, housing, health, education, sanitation, local transport, etc. are clearly amenable to planning at the local level. Planning of all these activities which have a high work component and can absorb a high proportion of surplus labour should better be undertaken at the local or area level where the employment needs and potential are more clearly known.

8.10. An area plan begins with the drawing up of an inventory of resources on scientific basis; projects and programmes for realising the development potential are then identified and feasibility reports prepared. The plan covers the location of centres for the supply of economic and social services. The most immediate feature of an area plan should be manpower planning for full employment. In order to formulate employment policy at the area level, it will be necessary to have precise information about the categories of unemployed persons, their conditions, present occupations, skill and adaptability for different jobs on or off the farm, seasonal or permanent. This kind of adjustment of programme to needs is possible only at the local level.

8.11. There will be a need to integrate area plans with the local resource base and with demand patterns at the local and inter-regional levels. Project formulation and planning expertise will be necessary at this level.

8.12. At the State level, planning expertise in relation to the new priorities will need considerable strengthening. Agricultural and rural development planning needs to be systematised in relation to agro-economic regions and the expected changes in cropping patterns. Demographic factors require to be closely examined and related with the new emphasis on social service planning and the RMNP. The relevant chapter in the plan has already indicated that as far as locational planning of transport is concerned, the regional aspects will be explicitly introduced in the national plan models. This has parallel implications for power and industrial planning.

8.13. In short, the objective of the new planning system would combine the pursuit of the given objectives with flexibility in operation to incorporate improvements in planning methodologies and information. While an implicit annual phasing of performance is assumed in the annual plan, the working out of these into a formal system will be put into effect in the first year of the Rolling Plan. The detailed aspects of the sub-regional planning strategies will also be worked out. Many important problems of planning methodologies and working them out in practice still remain. It is proposed to utilise each year of the Rolling Plan to successively try and resolve these problems in a step by step manner.

Plan Implementation, Monitoring and Evaluation

8.14. *Implementation machinery.*—With the greater emphasis on rural development, a major improvement in the organisation, attitudes and competence of the implementation machinery at all levels will be required at the State, district and block levels. New institutional arrangements may have to be devised which should ensure that the poorer sections of the population who are the targets of the new planning strategy, are given an adequate representation in the decision-making process particularly when it comes to critical areas, such as land reforms, access to institutional credit, location and operation of the infrastructural facilities which provide them with the minimum need. As a result of the studies undertaken and recommendations made by Administrative Reforms Commission and several other bodies, the deficiencies in implementation machinery are now more clearly identified, the benefits of operating improved managerial systems and techniques have been better understood and the conditions required for making these improvements are now known better than before. In the context of the Rolling Plan concept, there is immediate need for removing these deficiencies and effecting the improvements by both administrative and technical agencies engaged in the implementation tasks at all levels.

8.15. The major problems resulting in a significant gap in planning and implementation in the earlier plans can be broadly grouped as follows :

(i) Technical, administrative and managerial problems;

(ii) Inadequacy of data base and information systems ;

(iii) Inadequate attention to inter-linkages, the lack of a systems approach and poor monitoring and evaluation/feed-back system.

8.16. *Technical, administrative and managerial problems :*

These problems include :

(a) Inadequate investigation and data collection as a result of which the project appraisal, even when it is sought to be done in a systematic way, has to be carried out on the basis of wholly inadequate information, thus leading to wrong investment decisions.

(b) Inadequate detailed planning of projects in terms of their time schedules, input resource requirements and skills needed for project implementation.

(c) Lack of delegation of authority to subordinate organisation levels.

(d) Delays in issuing sanctions, approvals, fund authorisations and releases.

(e) Organisational weaknesses in planning and implementation at various levels.

(f) Lack of specific assignment of responsibility and accountability for results.

(g) Problems of industrial relations and inadequate motivation of personnel, lack of proper career planning and incentives and commitment to results.

(h) Inadequate share of representation of the weaker sections in elected bodies in the village, district and block levels and agencies such as cooperative credit societies, committees on land reform, land development banks etc.

8.17. *Improvements in administrative machinery.*—During the Five Year Plan 1978—83, steps are proposed to be intensified to remove some of the above shortcomings. Planning and implementation machinery will be further strengthened at all levels. In particular, the emphasis will have to be more on strengthening the administrative machinery for planning and implementation at the State, district, block and village level in view of further decentralisation of the planning and implementation process, increased outlays on rural development, agriculture and fulfilment of minimum needs. Through area level planning and involvement of voluntary agencies and the beneficiaries in the preparation and implementation of plan schemes at the area level, the decentralisation process will be made effective. The existing local power structures such as those which in many areas come in the way of successful execution of plan schemes relating to land reforms, would need to be dealt with suitably. Village level committees of the kind proposed for improving the implementation of land reforms may also require to be set up to deal with other schemes which seek to benefit selectively the poorer sections of the rural and urban population.

Some illustrative steps being undertaken in different sectors (some of which have been elaborated elsewhere in this document) are as follows :

(i) While strengthening the planning, implementation and monitoring organisations, professional expertise will be inducted at all levels. In particular; such specialised full-time planning and monitoring cells will be set up at district levels and block levels. Planning machinery at the State level also will be further strengthened by providing specialist skills in State planning as well as technical departments. Monitoring and evaluation cells (where these do not exist at present) will be set up in projects, State departments and Central ministries. The scheme of assisting the States for strengthening their planning machinery will be extended to cover the machinery at the regional/district/block levels. A provision of Rs. 10 crores is proposed for this scheme.

(ii) The block level plans will be prepared with full participation of voluntary agencies, professional institutions and the public. The Working Group set up by Planning Commission for evolving detailed guidelines for the preparation of block level plans, is expected to submit its report shortly. In the district level planning process also, representatives of elected institutions, financial institutions and public, with sufficient understanding of the local socio-economic problems, will be involved.

(iii) Machinery for ex-ante appraisal of projects will be strengthened. The inclusion of a project or a scheme in the plan is not the end of the planning process. It has to be appraised in terms of its techno-economic feasibility, including demand and market study, analysis of technologies, size, location, choices etc. At present such independent appraisal is confined to Central developmental projects costing Rs. 1 crore and above, except those relating to Ministries of Railways, Post and Telegraphs, Atomic Energy, Electronics and Space. In case of State projects and schemes, except for medium and major irrigation and power projects for which some appraisal is undertaken by Central Water Commission and Central Electricity Authority respectively, almost no mechanism exists for undertaking proper ex-ante appraisal in most of the State Governments. It is now proposed to extend the Central Government appraisal system to projects and programmes in other sectors and set up suitable appraisal machinery at the State level, particularly to appraise the plan schemes in the priority areas of agriculture, rural development, social services etc. to which the major part of plan investments will go.

(iv) A Working Group on Rationalisation of Points of Contact with Administration at the village level, appointed by the Department of Personnel and Administrative Reforms has, *inter-alia,* examined the question of whether or not there should be a multiplicity of village level workers for administering the various programmes of rural development. It has recommended that there should be 3 village level functionaries serving each village, one for doing all the regulatory work such as revenue collection, Land reforms, small savings, procurement of essential commodities, relief work etc. The second should be a Village Level Worker (VLW) who is involved in the planning and is responsible for execution of all programmes dealing with agriculture and allied sectors including MFAL, SFDA, CADP, DPAP, etc. as also the other area level programmes. The third functionary at the level of village or groups of villages should be appointed to look after all social services, such as, drinking water supply, rural roads, village and cottage industries, development programmes for rural youth, women and children, panchayat work etc. The Working Group has also recommended a single integrated service point—a multi-purpose co-operative society at the village level which would meet almost all the needs of the villages, such as seeds, fertilizers, pesticides, insecticides, agricultural implements, credit, storage, processing and marketing facilities, collection of electricity, government and panchayat dues, etc. These recommendations require careful consideration.

(v) Further simplification of rules and procedures and setting up of time limits or norms for completing various types of work, together with delegation of financial and administrative powers, will be attempted by each Government agency so as to minimise the problems experienced at the citizen administration contact points and enable the citizens to get full benefits of plan schemes.

(vi) In agriculture, as part of decentralisation, the responsibilities will be increasingly delegated to senior technical personnel at the State headquarters, divisional, district and sub-divisional levels. Linkages with village and block level panchayats and voluntary organisations will be strengthened. The extent to which administrative and financial authority can be delegated to local elected bodies from the district to the village level will be reviewed after the Asoka Mehta Committee's Report on Panchayati Raj Bodies has been examined by Government.

(vii) As part of the agricultural credit policy, progressive institutionalisation with a multi-purpose agency approach will be undertaken.

(viii) The investigation, survey and planning organisations in the Irrigation sector in the States will be strengthened suitably.

(ix) In respect of selected irrigation projects, special studies will be initiated to identify the constraints and deficiencies so that the necessary corrective measures can be taken. Systems studies will be initiated in order to help run projects on more scientific lines.

(x) Currently field postings, specially in backward areas where the real problems of the country's economic development lie, are treated as jobs to which unwanted officers should be sent. A new set of value systems accompanied, if necessary, by special recognition in their confidential reports of service in rural areas and if feasible, other incentives for able officers who do good work in difficult rural and backward areas will be given consideration.

(xi) Measures will be taken in consultation with State Governments to streamline the management of State Electricity Boards to make them more functionally oriented and to induct greater measures of relevant professional expertise. A high-level Committee of Experts is being set up to make recommendations, *inter alia,* for improving the working of the Boards.

(xii) Two Committees have been set up to examine the ways to reduce the construction time in the implementation of thermal and hydro-electric projects.

(xiii) Mechanism for bringing about a closer co-ordination between financial institutions and the Government so that funds flow preferentially into priority areas are being examined.

(xiv) A review on the simplification of the licensing procedure has been completed and is expected to be announced shortly.

(xv) The stress on training and devising better systems of training, selection and promotion in public sector enterprises will be increased with greater emphasis on autonomy and accountability for results. In the case of public sector corporations, the State Governments will be asked to consider the establishment of expert top management Selection Boards, the creation of equivalents to the Centre's Bureau of Public Enterprises and the adoption of norms and conventions dealing with the relationship between the Government and autonomous corporations.

(xvi) To improve industrial relations, a greater sense of involvement of the worker in his work and his organisation and basic attitudinal change on the part of both management and labour will need to be brought about.

(xvii) Attention will be paid to better maintenance of systems and full utilisation of existing capacities in irrigation, industry, mining and other sectors.

(xviii) Research, training and development efforts will be strengthened in all sectors. Research and analytical studies relating to administrative and managerial problems of planning and plan implementation will be encouraged and institutions and management consultancy organisations will be encouraged to provide professional inputs.

8.18. *Inadequacies in the data-base and information systems.*—The inadequacies in the data-base of the economy have been identified by the Data Improvement Committee, National Commission on Agriculture, Committee on Regional Accounts, Seminars organised by Indian Econometric Society, National Seminar on Social Statistics and Conference of Central and State Statistical Organisations. In addition, the inadequacy of management information systems in the Ministries, Departments and Organisations, which has been partly responsible for failures in implementation, the absence of sound and effective performance budgeting and performance audit systems and delays in setting up adequate monitoring and evaluation systems, have been now well recognised through various studies undertaken by the Administrative Reforms Commission, Planning Commission and other bodies.

8.19. During the Five Year Plan 1978—83, steps will be taken to improve the data-base of the economy. The various recommendations already made for improving the data-base for planning and policy-making will be taken up for implementation. A Standing Committee headed by Member, Planning Commission, has been constituted to evolve a coordinated approach for this purpose. For suggesting, *inter-alia,* improvements in the management information systems, evaluating the present status of performance budgeting in Central and State Governments and for reviewing the system of exchequer control in the departments and ministries, an Advisory Committee on Management Accounting and Management Information Systems in the Government, under the Chairmanship of the Finance Minister, has been constituted and a sub-group of this Committee headed by Member, Planning Commission, is undertaking a detailed study of problems and suggesting concrete steps for improving the quality of performance budgeting and introduction of management information systems. A start will be made in this study with the Ministries of Agriculture, Chemicals and Fertilisers and Works and Housing. These studies will be later extended to other Ministries. As part of these information systems, data banks will need to be developed by the Central Ministries, State Governments and major organisations. Efforts are already under way for developing and establishing a data bank for the storage and retrieval of data relating to plan projects and schemes in the Planning Commission. In the first phase of this data bank, attempts will be made to store certain minimum data in respect of each Plan project or scheme. The National Information Centre being set up at Delhi by the Department of Electronics will provide the service facilities for developing methodologies for computer based information systems for data storage, retrieval and processing and operating the data banks of the Government Departments and other agencies. Regional computer Centres are also being set up at Chandigarh, Kanpur/Lucknow and Pune in addition to Calcutta.

8.20. *Inadequate attention to inter-linkages, the lack of a systems approach and poor monitoring and evaluation/feedback systems* :The major problems in this area identified in the previous plans include :

(a) Insufficient attention paid to coordinated planning and preparation of inter-related projects. For example, command area development has frequently not been planned at the time of preparation of irrigation projects. Linkages between the agricultural programmes and the rural electrification schemes seem to be weak. Similarly, in some cases, power requirements of industrial projects have not been carefully examined while sanctioning these projects.

(b) A systems approach has in the past not been adequately applied to a number of areas. For example, energy development, taking into account all sources of energy, water development based on intra-basin studies and inter-basin studies, transport planning after considering all modes, have not generally been undertaken after comprehensive system studies.

(c) Monitoring and evaluation machinery, organisations as well as systems, have not been adequately established at all levels. For example, during the Fifth Five Year Plan, specific monitoring cells have been established only by a small number of Central Ministries and State Governments. The monitoring and evaluation system introduced by the Bureau of Public Enterprises in consultation with Planning Commission in respect of Central public sector undertakings have begun to highlight closely the problem areas, even though it has not yet started working fully. . These range from poor planning and scheduling of projects, lack of coordination and control to poor construction or operation problems, bad maintenance, lack of market analysis and so on. On the other hand, several projects are proceeding close to schedule, reflecting the impact of sound organisation structure, competent management and adequate delegation of powers. In the case of other sectors, such as Agriculture, Power, Irrigation, Rural Development, Education, Social Services etc., adequate monitoring and evaluation systems have yet to be established.

8.21. During the Five Year Plan 1978—83, greater attention will be paid to systems approach, inter-linkages, monitoring and evaluation. Some of the steps proposed include :

(i) Basin and regional plans for optimum development of waters within the national policy framework will be prepared.

(ii) In order to ensure an intergrated and systems approach covering all sources of energy,

working group on Energy Policy has been set up, *inter-alia,* to outline the national energy policy over the next 15 years.

(iii) A high level committee to recommend an integrated transport policy is being set up shortly.

(iv) Efforts will be made to prepare integrated regional and national plans for infrastructural inputs such as power and transport so that the optional techno-economic options can be highlighted.

(v) The inter-linkages of projects will be more closely examined at the time they are approved for investment. These inter-linkages will then be continuously monitored to ensure that the projects are implemented in step with each other and there are no imbalances in the creation or utilisation of capacity. The Rolling Plan concept will ensure that these linkages, particularly where long-term projects are concerned, are kept constantly under review.

(vi) For better planning of projects, projection of fund requirements for Annual Plans and to provide scientific basis for monitoring and evaluation, the systems of resource-based networks (using PERT/CPM techniques) introduced recently in respect of Central industry and mining projects and power generation schemes costing Rs. 20 crores and above, will be extended to other projects in these sectors and projects and schemes in other sectors such as Irrigation, Agriculture, etc.

(vii) *Monitoring and Concurrent Evaluation.*—Monitoring involves watching the progress against the time and resource schedules during the project implementation stage, through periodical reports and identifying shortfalls and lagging areas. Concurrent evaluation involves the assessment of the performance, as highlighted by the monitoring process, and making judgments regarding the progress of the project and the corrective action to be taken.

During the next plan, the monitoring and evaluation system will be strengthened at the Central, State, district, project and field levels. More emphasis will be laid on schemes in the priority areas of agriculture, rural development, provision of minimum needs, etc. The organisations (to be set up at various levels, as discussed earlier), will establish the relevant monitoring and evaluation systems. Each Central Ministry dealing with developmental projects, it is expected, will strengthen the monitoring and evaluation system and would undertake quarterly review of plan schemes and projects, dealing not only with financial outlays and expenditure but also the physical implementation of the schemes and achievement of targets. Similarly, each State Government will strengthen the monitoring and evaluation system in State Departments, at district and block levels and in the projects. It would make quarterly reviews of major outlays in priority sectors of Agriculture, Irrigation and Power etc. and once in six months for other sectors. The Planning Commission will seek to play a catalytic role in the establishment of this monitoring and evaluation machinery, and will also initiate periodical review meetings in certain key sectors to evaluate the progress of implementation with a view to identifying factors coming in the way of successful plan implementation. Efforts will be made to review the progress of interrelated projects so that they proceed in phase and large infructuous investments are not made. Typical examples of the areas in which such phasing is necessary, are power-intensive plants like aluminium and power projects which will feed them. These reviews may lead to such reallocation of resources as may be necessary in the light of actual performance.

(viii) *Post-facto Programme Evaluation.*—In certain sectors, many of which will be given the highest priority in the plan, it is not always certain that the strategy adopted for achieving the objectives is the right one. These sectors include health, education, village and small industries, roads, water supply, programmes for backward classes, and so on. While concurrent monitoring and evaluation will succeed in highlighting and correcting the gaps between the plan schedule and the way it is being implemented, it may not reveal basic conceptual, organisational and other weaknesses in the programme itself. This kind of (post-facto) evaluation has thus to be done after the programme is over or its major part has been implemented, to see whether the benefits, both quantitatively and qualitatively, have been achieved as planned. Typical areas in which such weaknesses have been found are—benefits not going to the target group, operating costs being much higher than anticipated, interest in the scheme beginning to decrease, unexpected sociological consequences and so on.

With the new priorities of the Plan focusing attention on rural development, this kind of evaluation has acquired a critical importance, especially after the adoption of the Rolling Plan System. It would be necessary to review carefully every year the progress made in respect of several schemes so as to take suitable corrective action. This requires the strengthening of the evaluation machinery in addition to the information base discussed earlier. The Conference of the Heads of State Evaluation Organisations convened by the Planning Commission in November, 1977, has made a number of important recommendations both in respect of studies to be undertaken by the Central Programme Evaluation Organisation and the State Evaluation Organisations as also for strengthening the State and Central evaluation machinery. Following

Committees, each headed by Member, Planning Commission, and consisting of the representatives from the Centre, States, and some independent research organisations are proposed to be set up :

(i) Review Committee to examine the existing evaluation machinery in the States and suggest measures for its strengthening ;

(ii) Committee for Training for Evaluation ; and it is proposed to widen further the practice of joint evaluation studies by the Central P.E.O. and the State Evaluation Organisations. It has been decided to take up two important schemes namely, Rural Water Supply and Rural Roads for evaluation on a coordinated basis and with some standardisation of methodology. The Central P.E.O. will continue to engage itself in the study of core areas for research and evaluation. The findings of the evaluation studies will be made available to all concerned and published in order to enable in-depth discussion. It is envisaged that the evaluation reports will give quick feedback to the programme administrators both in the Centre as well as in the States, to take corrective action.

8.22. *Training of personnel engaged in the planning and implementation tasks.*—In order to improve the administrative, technical and managerial capabilities of the personnel engaged in the planning and implementation tasks, greater stress will be laid on training. This would help in removing the deficiencies listed earlier, introducing better managerial tools and systems and developing the right attitudes among the government and project personnel. In each sector, provision has been made as a part of different schemes, for training of personnel. State and Central Training institutions are undertaking specific programmes for the development of personnel at different levels. These training efforts will be further strengthened. In addition, a scheme for Training of Personnel for Development Administration has been initiated in 1976-77. Under this scheme, a large number of training programmes are being organised for government and project personnel in areas such as planning, and implementation systems State Planning, project identification, formulation and appraisal, project implementation, monitoring and evaluation and training of trainers.

8.23. During the Five Year Plan, 1978—83, the training schemes will be expanded to cover programmes of training of personnel engaged on district and area level planning, integrated rural development and employment oriented schemes. Efforts will be made for developing more trainers and course material. Emphasis will be laid on organising training programmes at the field level nearest to the working conditions. Project personnel will be enabled to exchange experience on implementation of important development programmes on the site. The effectiveness of these training programmes will be closely evaluated so as to ensure their direct relation with the plan implementation process and improvement of the planning and implementation capabilities in different development areas. A provision of Rs. 2 crores is being made for this scheme for the Five Year Plan, 1978—83.

PART III

Chapter 9

Agriculture and Rural Development

Main Approach in Five Year Plan, 1978—83

The aim of agricultural and rural development will be growth for social justice, achievement of full employment in the rural areas in a period of ten years and removal of poverty. The realisation of self-sufficiency will continue to be one of the policy objectives. Also, the agricultural base having become strong and more diversified, it is possible to think in terms of creating surpluses and promoting exports in respect of certain commodities, which have high growth potential.

9.2 The main thrust of the development policy will be the generation of substantial employment at productivity levels which enable a fair return for labour so that the maximum feasible rate of growth in per capita income could be attained. Special attention will be paid to backward areas as well as to the Scheduled Caste and Scheduled Tribe families of the rural areas who are among the most disadvantaged sections of the population. Efforts will be made to accelerate development in these areas by overcoming the weaknesses in infrastructure and socio-economic system, which, at present, keep down their growth.

9.3 The broad strategy will be to develop irrigation as rapidly as possible and optimally utilise land and water as well as other local resources including human resources in a coordinated manner. For this, a comprehensive area development approach would be adopted with special attention to the poorer sections in the rural areas. Mixed farming would be promoted extensively as a means of increasing investment, employment and income per unit of land and integrating crop production, animal husbandry, forestry and fisheries. The diversification of the production base through this process would be particularly relevant for developing the economy of the small and marginal farmers whose present economy is subsistence farming with marginal investments. Apart from ensuring a balanced supply of food, fodder and other raw materials, mixed farming gives larger returns per hectare and also enables maximum investment per hectare leading to higher economic return. The development policy will lay emphasis on the production of foods of higher nutritive value with a view to improving the nutrition and health of the rural population.

9.4 The comprehensive approach would incorporate elements such as technology, institutions and services, which are required for improved and modernised agriculture. In the development of the infrastructure and other services, due care will be taken to safeguard the interests of the small and marginal farmers and agricultural labourers and ensure that the facilities earmarked for them are made available to them in full measure. For this purpose, this section of the population would be given due representation and voice in the institutions catering to their needs. Area planning and employment planning would be undertaken at the local level for integrated development with popular participation.

9.5 Agriculture and Rural Development is essentially a State subject and the strategies spelt out in the subsequent sections will depend for their success on the efforts made by State Governments. It is, therefore, important that State Governments should relate the allocation of Plan resources to programmes which need to be accorded high priority. Given the requisite effort, it should be possible to achieve the objectives set forth and raise substantially the production levels for several commodities even at the existing levels of technology. Considering the enormous resource endowments in the country, it would be necessary to translate the available know-how into widely accepted operational programmes. Considerable dedication, effort and skill would be required to ensure efficiency in the use of resources and the implementation of programmes.

Directions of Growth

9.6 A growth rate of 3.98 per cent per annum is envisaged for agriculture sector as a whole during the next five years, with a view to bringing about a reasonable balance between demand for and supply of various agricultural commodities, and generating productive employment, especially for the poor, in the rural areas. The expected demand for various agricultural commodities and the production possibilities by 1982-83 have been estimated. The estimates in respect of some of the selected items are indicated below :

Table 9.1 : Demand and Supply Projections of Agricultural Commodities

Sl. No.	Commodity	Unit	Level of production in 1977-78 anticipated	Expected demand for 1982-83	Production possibilities 1982-83	[1]Annual compound growth rate %
(0)	(1)		(2)	(3)	(4)	(5)
1.	Total foodgrains	M. Tonnes	121.00	140.48 to 144.48	140.5 to 144.5	3.61
2.	Sugarcane	M. Tonnes	156.90 to 160.00	188.00	188.00	3.28

[1]Worked out on the basis of upper levels of output.

(0)	(1)	(2)	(3)	(4)	(5)
3. Jute and Mesta	Lakh bales (each of 180 kgs.)	67.60 to 69.00	86.92	85.60	4.41
4. Cotton . .	Lakh bales (each of 170 kgs.)	64.30 to 68.00	92.50	81.50 to 92.50	6.35
5. Oilseeds (of which 5 major oilseeds)	Lakh tonnes	100.00 92.00 to 93.00	124.54	125.00 112.00 to 115.00	4.56 4.34

9.7 The higher levels of production given for 1977-78 are based on the expectation that the good weather conditions would continue and yield a better crop than assessed earlier. The higher levels of production possibilities for 1982-83 are based on better management of various inputs and somewhat better than average weather conditions. These levels of production will, by and large, provide for self-sufficiency in major agricultural commodities. The growth rates are worked out on the higher levels of production anticipated for 1977-78 as well as for 1982-83. Compared with the growth rate of 3.61 per cent for foodgrains. Pulse production is expected to rise at a higher rate in view of the special emphasis being laid on the development of this commodity. Likewise, the high growth rate assumed for oilseeds, as against the past performance, is considered essential for achieving self-sufficiency in edible oils. As is obvious, better Management of inputs and the assumption of somewhat better than average weather conditions would result in the growth rate of the agriculture sector of the economy being higher than 3.98 per cent compound per annum, which is implied in the lower range of output targets indicated above.

9.8 The output levels postulated for milk and milk product imply a growth rate of 5.23 per cent and those relating to other animal husbandry activities 4.01 per cent. Forestry and logging are anticipated to grow at 8.92 per cent and fishing at 4.06 per cent.

9.9 The projections of demand take into account the prospects for exports in selected commodities having such potential. The policy would, however, be to adjust exports in accordance with the internal demand-supply situation.

9.10 The main strategy to attain the required production levels would comprise, among others increases in irrigation, gross cropped area and cropping intensity as well as a larger application of inputs. Emphasis would also be placed on improving the rainfed farming to bring about greater stability in production and increase in productivity. The productivity of animals would be enhanced through breed improvement and better management. Both in irrigated and rainfed farming, the weaker sections would be provided fair opportunities for growth, and development. The major thrust of the programme of animal husbandry will be to improve the economy of this group of the population.

9.11 The increases contemplated in respect of some of the important inputs are indicated below :

Sl. No.	Item	Unit	Additional by 1982-83
1.	Irrigation (potential) . . .	Mill ha.	17
2.	Gross Cropped Area . . .	Mill ha.	6
3.	High Yielding Varieties for foodgrains	Mill ha.	15
4.	Consumption of chemical fertilisers .	Mill tonnes	3.6

9.12 The gross cropped area is anticipated to increase from 173.92 million hectares in 1977-78 to 180.03 million hectares in 1982-83, mainly as a result of higher irrigation ratio. Out of the additional irrigation potential of 17 million hectares proposed to be created during the next five years, a utilisation of 15 million hectares is expected. Regarding irrigation distribution, higher levels of irrigation for pulses and commercial crops like cotton and oilseeds are contemplated.

9.13 The gross irrigated area is expected to grow from 48.41 million hectares in 1977-78 to 63.41 million hectares in 1982-83 that is, at an annual compound growth rate of 5.54 per cent during the Plan period ending 1982-83 as against a growth rate of 3.18 per cent during the period 1961-62 to 1973-74. In the allocation of acreage amongst crops, care has been taken to provide for appropriate increases in the case of pulses and rice as well as oilseeds, fibres and sugarcane. The growth rate in the area under wheat has, however, been moderated. Provision has also been made for increasing the area under fodder crops to meet the fodder requirements.

9.14 The demand for fertilisers (NPK) has been estimated on the basis of area and projected fertiliser dosages for various crops—crop complexes in 1982-83. The demand has been placed at 7.8 million tonnes in 1982-83, thereby implying an increase of 3.6 million tonnes, i.e., 3.4 million tonnes for consumption and 0.2 million tonnes for carry over stocks, over the level in 1977-78.

9.15 A significant step up is postulated in the installation of electrical pumpsets for irrigation. This is consistent with the large programme of minor irrigation contemplated. An expansion of power system is envisaged for the rural areas which would facilitate the programme of installation and energisation of pumpsets.

9.16 The strategy for securing a rapid increase in the various inputs for production would be supported by input of science and technology, assured availability of credit, a strong extension network and facilities for marketing, storage and processing. Suitable linkages would be developed and strengthened with other infrastructure systems viz., power, transport and communication, for processing and marketing of the produce.

9.17 Consistent with the policy of according primacy to agriculture and rural development in the Plan

priorities and the strategy adopted for achieving a rapid growth of output and employment, the financial allocations have been stipulated at a much higher level compared with the outlay envisaged during the Fifth Plan period. Thus the total outlay proposed for agriculture, irrigation and rural development for the Five Year Plan 1978—83 is Rs. 18,250 crores as against Rs. 8,528 crores for the Fifth Plan. The broad sub-sectorwise distribution of the outlays comparable to Fifth Plan is given below :—

Table 9.2 : Public Sector outlays on Agriculture and Rural Development

Sl. No.	Sector	Outlay	
		Fifth Plan 1974–79	Five Year Plan 1978–83
(0)	(1)	(2)	(3)
		(Rs. crores)	
I.	AGRICULTURE AND ALLIED ACTIVITIES	**3109**	**5800**
	Agricultural research and Education	210	425
	Agricultural Production . .	575	1125
	Land Reforms and Consolidation of holdings . . .	163	350
	Soil Conservation & Land Reclamation	221	450
	Food	123	150
	Animal Husbandry and Dairying .	438	825
	Fisheries	150	400
	Forestry	206	450
	Investment in agricultural financial institutions	520	1000
	Community Development and Panchayati Raj	127	150
	Cooperation	376	475
II.	RURAL DEVELOPMENT . . .	**1193**	**2800**
	Special programmes for rural development	537	1550
	Command Area Development . .	206	450
	Hill and Tribal Area Development .	450	800
III.	IRRIGATION AND FLOOD CONTROL .	**4226**	**9650**
	Major and Medium Irrigation . .	3089	7250
	Minor Irrigation	792	1725
	Flood Control	345	675
	GRAND TOTAL (I+II+III) . .	**8528**	**18250**[1]

[1]Sub-sectorwise break-up is only indicative and would be further refined in consultation with the States, Union Territories and Central Ministries.

9.18 Agricultural development also involves a variety of efforts outside budgetary allocation. Institutional finance would, therefore, be a major supplementary source of financing in many areas of agricultural development such as exploitation of groundwater for minor irrigation, land development and land reclamation, forestry, animal husbandry and fisheries programmes. In order that adequate institutional finance is made available, a much higher level of budgetary support to credit institutions is contemplated.

Land Reforms

9.19 Land reforms need to be viewed in the context of the Plan strategy and as an integral part of em- of the Plan strategy and as an integral part of emforms, however, is not quite satisfactory. Out of about 2 million hectares of land declared surplus, hardly 25 per cent of the area has been distributed. Only about 1/3rd of the land distributed has accrued to the members of the Scheduled Castes and Scheduled Tribes. The slow progress is due to the unsatisfactory implementation of ceiling laws. Several States are yet to bring their tenancy laws in line with the National Policy with regard to regulation of rent, security of tenure and conferment of ownership rights. In a number of States, the tenants and sharecroppers are liable to ejectment in exercise of the landlord's indefinite right of resumption.

9.20 A more equitable distribution of land resources through programmes of land reforms has consistently been a major policy objective since independence. But the will to implement this policy has been sadly lacking all along. During this Plan period this basic policy will be implemented vigorously so that there is a meeting ground between policy and performance. Every attempt will be made to complete the process of land reforms.

9.21 The ceiling legislation would need to be enforced more vigorously so that the programme of distribution of ceiling surplus land could be completed during the five year period. Attention will be directed towards bringing about charges designed to eliminate legal and procedural bottlenecks and circumvention of the ceiling law. It will be necessary to ensure that :

(i) the land declared surplus to the ceiling is taken over by the State;

(ii) it is distributed and physically delivered to the eligible categories expeditiously;

(iii) the land records are mutated to reflect their rights, and

(iv) the allottees are given adequate financial, material and technical assistance to bring the land under productive cultivation.

Priority in allotment will be given to the landless belonging to Scheduled Castes and Scheduled Tribes. The allottees will be assisted in a variety of ways so that the land allotted to them becomes a source of gainful employment. Adequate institutional credit at reasonable rates of interest and where necessary, on personnel security would be made available to the allottees to meet their requirements of both crop-loans and term-loans. The extension organisation will pay special attention to such allottees and help them to make their agriculture economic.

9.22. Tenancy reform is equally important. The States where the rent exceeds the limit accepted at the national level, i.e. 1/5th to 1/4th of the gross produce. should scale down the rent through legislation. The land should belong to the tiller and except for categories subject to disabilities, occupancy rights should be conferred on tenants and share-croppers. As a first step, the indefinite right of resumption, wherever it

exists, should be extinguished. At the same time steps should be taken to record the interests of tenants and share-croppers in the land records. Without this, the protection available under the tenancy laws will not accrue.

9.23 The updating of land records is crucial to the development of a healthy agriculture. Large areas in the country do not have uptodate land records. This is anachronistic in a system of administration which presupposes the existence of direct relationship between the State and the owner-farmer. What is more, the records once prepared have to be continuously updated as otherwise they would cease to be useful after a few years. The investment on preparation of records and their continuous updating has to be accepted as investment on agriculture and should not be judged as expenditure on schemes which yield no return. The revenue administration at the field level from village upwards also has to be strengthened qualitatively so that it is impartail, efficient and public spirited.

9.24 It has been seen that farming operations are more efficient and the modernisation of agriculture is more rapid in areas where holdings have been consolidated. In large parts of the country, however, these operations have not begun. The consolidation of holdings will be a key programme in future years, with priority for the irrigated tracts. However, care should be taken to ensure that consolidation does not result in the extinguishment or abridgement of the interests of tenants and share croppers. It would be necessary that consolidation operations are preceded by an enquiry into existencec of tenancy interests and that these interests are recorded before ownership is altered. Consolidation law should not extinguish such right when the land owner gets another piece of land.

9.25. For better implementation of land reforms, it will be essential to involve the beneficiaries by setting up of village committees. Some of the States have made provisions in the law for such committees. Provision for such committees should be made by other States as well. However, to make these committees more effective, action is required in two directions :

(1) Substantial representation of the beneficiaries on the committees ; and

(2) Vesting these committees with adequate powers in implementing the land reforms legislation.

Land Utilisation

9.26 For attaining the required production levels and for improving the economy of the rural poor, the utilisation of the limited land resources will need to be optimised consistent with the eco-system. It is also necessary to ensure that the productive capability of the land is continuously improved and maintained and its deterioration prevented. Land use planning will need to be based on a resource survey and production potential of the land. Soil surveys will be organised in a coordinated manner for proper utilisation of land resources. Cropping systems will be based on land capability and rainfall pattern as well as water availability from irrigation sources. In other words, land should be used for best effect. The National Commission on Agriculture has indicated that with this approach, our needs can be meet through internal production. Keeping this in view, the cereal production should be restricted to suitable lands, which would make it possible to not only improve the production level but also ensure a favourable economic return to the farmer Marginal lands and areas having medium to low rainfall are best suited for mixed cropping of coarse cereals, pulses an doilseeds, where rainfall is scanty, a silvipastoral approach would be adopted.

9.27 In areas with irrigation support the main approach will be to adpot multiple cropping for higher and diversified production as well as for larger employment. In the rainfed areas, where water availability is a constraint, the approach will be mixed cropping. In order to utilise the potential in these areas the watershed management approach initiated recently will be tried on a much larger scale during the next five years for moisture conservation and checking the deterioration of the soils. It will be a multi-disciplinary approach to conserve, reclaim, improve and develop the areas for maximum agricultural production and create large scale rural employment. Soil and water conservatoin measures would promote development of such mixed farming activities as ideally suited to local endowments and constraints *viz.*, crops horticulture, plantations, animal husbandry and dairying supported with fodder cultivation and agro-forestry. Integrated watershed management would be adpoted for effective flood control, improving drainage, prevention of land slides, providing vegetative cover and wind breaks, water harvesting and recycling of excess precipitation, land levelling shaping, reclamation and development. The States should give pointed attention towards integrated watershed management. Such an integrated approach to watershed management would be commercially viable to be financed substantially through institutional funds. In reckening viability the social, long term and protective benefits accruing from land development should be taken into account.

9.28 Considerable areas in the country have special erosion and other porblems. Such problem areas are highly humid river catchments, slopes under shifting cultivation, saline and alkaline lands, water logged areas and ravines. The watershed management approach for these areas would be to check the spread and deterioration by erosion, to spread natural vegetative cover in non-culturable areas and reclaim all culturable wastes for agricultural production based on the land use capabilities. With a view to arresting siltation of big reservoirs, high priority would be accorded to the treatment of critical areas in the subwatershed which deliver the largest amount of sediment. Alkaline soils would need to be amended through application of gypsum and other amendments and adoption of complementary and follow-up measures, Saline soils would require leaching with adequate drainage provision and growing of suitable salinity tolerent vegetative cover such as selective fodder and crop varieties which are tolerent, coconut and coastal species. In the plains, particularly in the heavy black soils, ponds would have to be built into the watershed approach for harvesting of precipitation and run-off for off-season use. Drainage would also be necessary to raise a crop in the kharif season. In ravinous areas, peripheral plateaus shallow ravines and broad valley bottoms would be reclaimed for cultivation with provision for irrigation. Increase of ravines into adjacent

table lands will be checked by runoff control, on the fringes through peripheral bunding, vegetative cover and other means. Slopes and deeper ravines are to be stabilised through development of forestry, plantations, horticulture and fodder trees depending on water availability. In hill areas, specially those under *jhum* cultivation, valley and gentle slopes could be developed for crop husbandry through measures like levelling, bunding and terracing, while the steeper slopes would be provided with vegetative cover through forests, plantations and grasses. A beginning in this direction has already been made in the northeastern hill areas and the approach is proposed to be pursued vigorously in the future. In flood prone areas, crop production during the flood free period would be promoted.

9.29 Multi-disciplinary teams of experts would be entrusted with the watershed management. Soil conservation specialist support would form part of the new extension strategy at the field level. It would be necessary to strengthen the soil conservation wing in the State and provide strong linkages with other concerned Departments. The soil conservation staff in the State would be retrained for watershed management. A coordinated approach will be adopted in the matter of training to involve other concerned Departments. State Land Use Boards are to be created, wherever non-existent, for proper land use planning.

9.30 It is proposed to establish Land Reclamation and Development Corporations or to use one of the existing Corporations in the States to undertake programmes of reclamatiton of deteriorated but potentially productive lands like ravines, saline, alkaline lands and other culturable wastes for the development pastures, and where land slope permits, suitable crop cultivation, horticulture and plantations and also provide custom services like land levelling, shaping, installation of tube-wells and improvement of irrigation system. The corporations will also be able to make use of institutional finances.

9.31 For proper land utilisation, integrated watershed management and maintenance of soil conservation treatments, active involvement and participation of local people, voluntary organisations and Panchayats will be obtained through motivation, persuasion and legislative action wherever necessary.

Crop Production

9.32 In order to achieve the twin objectives of self-sufficiency in food and commercial crops and increasing the employment and income of the farming community, a strategy of crop diversification will be adopted. This will also ensure growth in gross cropped area and optimise the use of basic resources of land and water. No appreciable increase is possible, and even desirable, in the area under cultivation. However, problem soils like alkaline lands are proposed to be reclaimed and brought under cultivation. At present, large areas are left fallow during rabi after the harvest of main kharif crop. The system of cropping is such that the kharif crops are harvested very late after the recession of the monsoon with the result that there is little residual moisture for raising a successful rabi/summer crops. In order to correct this situation, it would be necessary to enable the farmers to advance the kharif sowings through a programme of community nurseries of paddy and use of short duration varieties. This will also improve the productivity of the kharif crops which, at present, by remaining in the field much longer after the recession of the monsoon face moisture stress at the ripening stage. In the system of crop diversification early preparatory tillage operations will be adopted. This will enable the farmers to advance the sowings and also take up dry sowing, particularly in the black soil areas. Besides, it will also reduce the weed and pest incidence. With higher emphasis on increasing crop intensity, the pest incidence as well as the pest complex is likely to aggravate and would require adequate attention.

9.33 The proposed increase in irrigation and the improvement in water use and supply schedules, accompanied by a strong extension education support, will enable the farmers to adopt this system of farming and have a high yield during the kharif season followed by a second successful rabi crop in the same year. This will, however, necessitate a detailed micro-level planning to determine the various constraints and find out cropping patterns which are suitable for the area and are adjusted to the rainfall rhythm. Emphasis will be laid on increasing the area under rabi pulses and oilseeds, which are in short supply. Introduction of a pulse crop in the rotation will also improve the soil fertility balances.

9.34 In rainfed areas mixed cropping has been adopted by the farmers as a measure of security against failure. Recent researches have shown that a proper mixture of the legumes with cereals like jowar and bajra increases the production of both the crops. This would be particularly applicable to Central India, where large areas are put under jowar, bajra and groundnut. In order to translate the technology into farm practice, a large-scale programme of demonstratitons and intensive training to the farmers would be up.

9.35 Efficiency of the inputs with a view to increasing the crop responses will have to be improved specifically in the case of high cost inputs viz. fertilisers and water. In the new farming system, where cattle development will form an integral part of the strategy for development, allocation of area for growing of fodder, specially legumes, will be given due emphasis.

9.36 Keeping this broad approach in view, special attention will be paid to pulses, oilseeds and cotton in the crop production programme. The policy would be to increase the acreage under these crops through multiple cropping in irrigated areas and mixed cropping in rainfed areas. Some diversion of area from low yielding cereals to pulses would also be encouraged. More extensive use of phosphatic fertilisers and facilities for pest control are among the important measures which have been recently initiated and will be intensified.

9.37 Inadequate supply of seeds in respect of pulses, oilseeds, jute and cotton have been a constraint in enhancing their production. This deficiency will be removed by a suitable seed production programme to be undertaken by the National Seeds Corporation as well as State Seeds Corporations. Apart from production

of nucleus, foundation and certified seeds, other measures would include laying out demonstrations and providing minikits containing seeds of new varieties. Extension of groundnut area in the irrigation commands of major and medium irrigation projects as well as well-irrigation would be attempted. Presowing treatment of seeds and application of rhizobial culture for pulses, particularly in new areas, would be propagated. For rapeseed and mustard, efforts would be made to encourage their cultivation as a catch crop in the rotation. Production of safflower and sunflower will be encouraged and supported by proper marketing arrangements. For major pulse and oilseeds crops price incentives have recently been given for larger production. Such support would be continued and refined.

9.38 The basic problem of cotton relates to the availability of medium staple varieties. The newly developed hybrids of these varieties are proposed to be introduced over large areas. The areas under the commands of different major and medium irrigation projects will be identified for taking up cotton production. It is also proposed to propagate the technique of transplantation of cotton in rainfed conditions on the lines of the experience gained in Gujarat. This technique would result in advancing the crop by about a month and thereby avoid the period of moisture stress.

9.39 The major effort in jute development would be to augment production and reduce its fluctuations as far as possible and improve the yield and quality of fibres. The intensive area development programme, taken up in the potential jute growing districts, would be implemented more effectively. Research effort would be directed towards evolving suitable varieties, while the development efforts would seek to popularise the use of production inputs, specially fertilisers, and bringing more irrigated areas under jute. The jute growers will be assisted in marketing of jute by the Jute Corporation of India so that the price support is fully assured.

9.40 It has been observed that the introduction of the high yielding varieties of cereal crops has not resulted in the expected increase in production or productivity, although the area coverage was achieved. This highlights the importance of combining the adoption of high yielding seeds with proper agronomic practices to exploit their inherent potential. In the strategy of extension eduction, this will receive special attention. Stress will also be laid on expanding the area under high yielding varieties as rapidly as possible. It will be necessary to develop more location specific varieties which give adequate returns under different agro-climatic situations.

9.41 For the development of horticultural crops, the production of high quality planting material would be given priority. Necessary infrastructure for organised marketing and processing will be a key programme so as to ensure remunerative returns to the growers. The production programme would be taken up on compact area basis so that marketing and processing could be streamlined. Attempt will be made to increase productivity from the existing orchards by propogating improved agronomic practices. Efforts will be made to link up horticulture development with the economy of the small and marginal farmers and agricultural labourers, specially in tribal and hill areas. Special stress would be laid on organising production and marketing of vegetables and quick growing fruits in the vicinity of cities and other large consuming areas. Production of potato and tuber crops would also be accorded due priority to supplement the food and the feed requirements.

9.42 The main strategy for increasing the production of plantation crops would be two pronged, viz. increasing productivity with high yielding and disease resistant clones and introducing crops in the non-traditional areas, especially tribal areas in Central India and north eastern States. The plantations will be established in the departmental as well as non-departmental farms. A major aim of the programme would be to settle families now engaged in shifting cultivation.

Inputs

(1) Irrigation

(a) *Major and Medium Irrigation*

Objectives and Strategy in the Fifth Plan

9.43. For the Fifth Plan (1974—79), the two main objectives were :

(i) substantial increase in the creation of irrigation potential consistent with the relevant organisational and financial capabilities and having regard to the needs of the drought-prone areas, and

(ii) improvement in the utilisation of the created potential and efficient management of water and land for achieving maximum productivity.

At the same time, it was sought to reduce, to the extent possible, the inter-State imbalances in the development of irrigation potential from major and medium schemes.

9.44 In making provisions for the Fifth Plan it was considered that the needs of the continuing medium schemes and the major projects were to be adequately provided. Emphasis was on modernisation of the older irrigation systems for better control and distribution of water and augmentation of supplies. In addition, priority was to be given to those schemes which benefit chronically drought-affected, tribal and backward areas. The position regarding surpluses and shortages in various basins was to be studied in depth and the need for an integrated and coordinated approach to the irrigated agriculture for achieving best results towards optimum production was highlighted. Attention was drawn specifically to the need for speedy solutions to the problems of inter-State river waters disputes and taking up of research, development and investigation programmes.

Achievements during 1974—78

9.45 During the first two years of the Fifth Plan, the prices of materials, labour, etc. rose abnormally

due to price inflation set in motion by the crude oil price rise in 1973. The resources that could be mobilised, not being enough to meet the demands of the inflationary situation most of the funds were allocated to the on-going schemes. This resulted in taking up of very few new schemes. However, during the year 1977-78, higher allocations were made for the new schemes, so as to maintain continuity in the succeeding years. Delay in settlement of the inter-State disputes has also caused distortions in the aim of achieving regional balance.

9.46 The year-wise expenditure and the achievement of additional irrigation potential are given below :

Table 9.3 : Actual Expenditure and Creation of Additional Irrigation potential during 1974-78

Year	Actual Expenditure	Additional Potential	
		Target	Created
(1)	(2)	(3)	(4)
	(Rs. crores)	(million ha.)	
1974-75	383	0.8	0.8
1975-76	493	1.0	1.0
1976-77	684	1.2	1.0
1977-78 (anticipated) . .	906	.3	1 5
TOTAL	2466	4.3	4.3

Objectives and Strategies for the Five Year Plan 1978—83

9.47 The classification of minor irrigation schemes and medium irrigation schemes so far followed has revealed a gap in the coverage. In order to cover the entire gamut of irrigation sources under a suitable head which can be universally used in the country, from the year 1978-79, the following classification will be observed :

(a) *Minor Schemes*—those with culturable command areas (CCA) up to 2,000 hectares.

(b) *Medium Scheme*—those with culturable command areas (CCA) above 2000 up to 10,000 hectares.

(c) *Major schemes*—those with culturable command areas (CCA) more than 10,000 hectares.

9.48 Irrigation is not an end in itself. Irrigation has to be used in order to stabilise agricultural production. It has also to play its part in increasing agricultural production. The Irrigation Commission has laid down the principles of use of irrigation waters. They are—

(a) maximise production per acre where water is not the constraint :

(b) maximise production per unit of water where water constraint is marginal, and

(c) where water constraint is heavy, immunise the major crop of the rainy season against drought.

These principles will be kept in view in developing the irrigation routine in the existing and the new irrigation projects.

9.49 Though modernisation of the existing irrigation projects in order to make them effective for modern agriculture, as advised by the Irrigation Commission, was accepted as a priority approach during the Fifth Plan period, it has been noticed that the States have not been investing sufficiently in this aspect of irrigation development. The expertise of the States of formulate modernisation projects needs improvement. This has to be developed by appropriate measures so that during the Plan, the programme of modernisation gets a fillip. Adequate funds would have to be allocated for this priority programme.

9.50 Drainage improvement is an important part of the modernisation approach. For lack of attention, the drainage problem has been serious particularly in heavy rainfall areas resulting in heavy stagnation of water in the lower reaches of the command leading to poor agriculture. Very little active implementation has, however, been done in this regard. Special attention will have to be paid in the next five years to improving the drainage systems in the existing commands. It has also to be ensured that in all new projects, the project itself contains the necessary provisions for drainage. A drainage system means not only provision of drainage channels but proper land shaping in heavy soils so that water does not stagnate anywhere. This will be given necessary attention.

9.51 The steps taken during the Fifth Plan period to expedite the construction of major and medium schemes so that results can be achieved quickly has had some effect. Even then, it is felt that more attention can be paid to detailed programming of projects and allocation of funds so that major and medium irrigation sources can be activised quickly. The tendency to take up a large number of projects and allocate small amounts every year for their progressing needs to be checked. Major and medium irrigation schemes would be taken under the Plan for funding on the basis of a suitable perspective of requirements. In this context, certain priorities have to be observed. Water for agriculture being the main constraint in chronically drought-affected areas, priority will have to be given to irrigation projects in these areas so that disruption of regional economy may be avoided. It is also necessary to ensure that there is a regional balance in the utilisation of the water potential both surface and sub-surface available in the various regions. In this context, it is necessary to prepare basin-wise and regional plans for optimum development of the waters within the national policy framework. Inter-State river water disputes are preventing balanced development of irrigation in the country. It is, therefore, necessary to ensure that agreements are reached as quickly as possible so that irrigation development can be taken up in a balanced manner.

9.52 Conjunctive use of surface and ground water in the commands of irrigation projects is the best way of maximising agricultural production and making the best use of water available. The crop planning in command areas will be developed on this basis during the Plan. Simultaneously, special emphasis will be given to increasing ground water utilisation through both public investments and private investments in the commands of irrigation projects.

9.53 Where surface water availability is low and the terrain through which the canals pass is such that seepage in the system reduces availability at the field end, lining of the canal system either partially or wholly has been accepted as a necessary investment. Already in Punjab and Haryana where water is precious substantial lining of the canal systems has been taken up. This programme of canal lining has to be so formulated that the existing ground water potential is not materially affected. The importance of this approach has now been accepted by the States and every effort will be made to see that during the Plan lining of canals, where necessary, is taken as a priority programme.

9.54 Taking into consideration the capacity for organising and executing programmes according to schedule and keeping in view past experience and also considering the present state of inter State dispute, it would be reasonable to aim for an additional irrigation potential of eight million hectares, during the Five Year Plan 1978—83. For achieving this, the investigation, survey, research and planning organisations in the States will have to be strengthened suitably. The concurrent monitoring system which has been evolved over the years will also have to work effectively to smoothen out difficulties. The Central Monitoring System under the Central Water Commission needs to be strengthened so that at the national level an effective watch can be kept on performance and utilisation.

9.55 The Central Water Commission has already been asked to study in detail the basin water availabilities and postulate intra-basin and inter-basin transfer of water for most effective use of available surface water resources. They have also been asked, as a first priority, to consider intra-basin and inter-basin transfer possibilities to provide additional surface water to chronically drought-affected and difficult areas. For this, accurate monitoring of water flows and other data on our rivers is essential and the data has to be passed on to the Central Planning Organisation quickly. Necessary steps will be taken during the Plan period in this regard.

9.56 Each State has to prepare an appropriate irrigation programme within the long-term perspective of its irrigation development. Adequate funds have to be provided from year to year and organisational and implementation capabilities built up to sustain the higher tempo of irrigation development. Surveys, investigations, research, designs and formulation of detailed estimates for various components call for special attention since any delays or deficiencies in this respect will not only lead to delay in implementation but also escalation in costs. Delegation of powers and modalities of taking expeditious decisions during implementation of projects is an area where considerable improvements are called for. Delay in acquisition of land for the irrigation projects very often proves to be a constraint on their timely implementation. It will be necessary to associate a sufficient number of officers at the start of every project to experdite land acquisition proceedings.

9.57 Special emphasis will be laid on implementation of irrigation projects in the drought-prone, tribal and backward areas and funds would be earmarked separately for these areas both for investigation and execution of the projects.

9.58 Irrigation systems suffer from lack of maintenance. It has been found that in most of these systerms the maintenance grants are not sufficient to keep the systems in proper order. Adequate funds would have to be provided for proper maintenance and repairs of the canal systems.

9.59 Even though considerable investments have been made in the execution of various irrigation projects in the country, the experience has been that the projected benefits have not been achieved either in respect of service rendered to the farmers or in terms of the production from irrigated agriculture. As several variable factors come into play in an irrigation system, an indepth study of these factors along with proper system analysis appears to be called for. It is proposed to initiate such studies in respect of selected projects during the Plan period so that the constraints and deficiencies are identified for taking necessary corrective measures.

9.60 It was emphasised by the Irrigation Commission in their report of 1972 that water rates charged from the farmers should be reviewed by the States so that at least the working expenses are fully recovered. Although rates have been revised upwards, still most of the projects require subsidies for their working expenses. It is proposed to persuade the States to review the position in this regard and take appropriate action.

9.61 Efficient management of an irrigation system requires coordination of various activities, viz., regulation of reservoirs, operation of canals, branches, distributaries, minor and water-courses including their control structures, estimation of demand for water on the basis of cropping pattern, ensuring timely supply and introduction of rotation and wara-bandi system etc. Very few irrigation projects in the country have conducted detailed systems studies for their scientific management. It is proposed to initiate studies in this regard in a number of major irrigation projects during the Plan 1978—83.

(b) *Minor Irrigation*

Objective and Strategy in the Fifth Plan

9.62 Minor irrigation includes surface water projects, both flow and lift and groundwater development. Till now the criterion was that schemes costing less than Rs. 25 lakhs each in the plains and less than Rs. 30 lakhs each in the hilly areas were classified

under minor irrigation. In some areas micro storage works to improve moisture regime in the vicinity and percolation tanks to replenish groundwater are also taken up under this programme. Whereas the outlays for Major and Medium Irrigation Programmes are met exclusively from the public sector, the investment on minor irrigation schemes is derived largely from private and institutional sources. Groundwater development forms the bulk of the minor irrigation programme. It is essentially a farmer's programme implemented primarily through individual and cooperative efforts with the finances obtained mainly from institutional sources. It has several advantages and has become a vital factor in promoting modern agriculture through high yielding crops. Minor surface water-flow and lift irrigation schemes occupy a conspicuous place in respect of irrigated agriculture in undulating hilly regions and high plateau lands in the country. These are the only means of irrigation in several chronically draught affected tracts, are labour intensive and provide opportunities for rural employment. Upto the end of the Fourth Plan, the total cropped area which benefited from minor irrigation was assessed at 23.5 million hectares. During the Fifth Plan, an increase of 5 million hectares was envisaged as against the achievement of 4.5 million hectares during the Fourth Plan.

9.63. The Fifth Plan emphasised that considering the large scale groundwater development in the country it was necessary to build up matching technical, administrative and legislative arrangements to ensure growth on healthy lines. It was noted that surface minor irrigation works had not received adequate technical support in the matter of design, construction and maintenance. It was proposed to make a serious effort to correct these defects during the Fifth Plan period to make good these deficiencies.

9.64 It was observed in the Fifth Plan that while assessing the benefits from minor irrigation schemes due allowance must be made for the irrigated areas going out of use due to silting in the case of tanks, clogging of filters and the pumps and motors becoming unserviceable in the case of tubewells. It was also considered necessary to improve statistical base relating to area irrigated from minor irrigation works.

Achievements during 1974—78

9.65. During the first two years of the Fifth Five Years Plan the programme suffered a setback on account of shortage of aluminium which slowed down the electrification programme which was most vital for groundwater development and surface lift irrigation schemes. Some of the States which were going very fast with groundwater development like Tamil Nadu, Gujarat, Punjab and Haryana had to slow down the pace considerably because many pockets in these States were reaching a saturation stage in respect of groundwater potential. On the other hand, States like Uttar Pradesh, Bihar, West Bengal, Assam, Orissa and Madhya Pradesh where considerable groundwater potential was still available could not move fast on account of weak cooperative structures and insufficient flow of institutional credit. Inadequacy of power and high price and shortage of diesel have also been the cause of slow progress.

9.66. The yearwise expenditure and achievements of additional irrigation potential are given below :—

Table 9.4 : Actual Expenditure and creation of additional irrigation potential during 1974-78

Year	Public Sector outlay	Institutional outlay	Central assistance under Central Sector Plan[1]	Additional potential created (net)
(1)	(2)	(3)	(4)	(5)
		(Rs. crores/million ha.)		
1974-75 . .	122.85	160.00	12.00	0.8
1975-76 . .	128.59	175.00	19.00	0.9
1976-77 . .	172.06	210.00	38.00	1.0
1977-78 (anticipated) . .	197.18	245.00	40.00	1.1
TOTAL . .	**620.68**	**790.00**	**109.00**	**3.8** (+0.5 supplemental irrigation).

[1]SFPA, DPAP, CADP, & ITDP.

Objectives and Strategies for the Five Year Plan 1978—83

9.67. Consistent with the criteria fixed for classification of major and medium irrigation schemes a decision has been taken to revise the criteria for minor irrigation schemes as those which have culturable command area upto 2000 ha. This new classification will come into operation with the commencement of the Plan.

9.68 The ultimate potential for development of minor surface irrigation has been broadly assessed at 15 million hectares and for ground water at 40 million hectares. The expected cumulative utilisation under minor surface irrigation till the end of 1977-78 works out to 7.8 million hectares and for groundwater to 19.5 million hectares. In addition, groundwater is supplementing major and medium irrigation systems to an estimated extent of about 1.5 million hectares. Therefore, substantial potential is available which needs to be harnessed as early as possible. It is considered feasible to create an additional irrigation potential of the order of 9 million hectares from minor irrigation programmes, consisting of 7 million hectares from groundwater and 2 million hectares from surface water resources during the next five years. To achieve this, outlays will have to be stepped up considerably.

9.69. No precise assessment of private investment in minor irrigation during the Fifth Plan is available. It would be useful to undertake some studies to guage the investment in minor irrigation by private sector so as to assess the total investment likely to take place during the next five years.

9.70 Statistics of minor irrigation are based on different norms in different States. This has often made

realistic estimates of minor irrigation potential created in various States difficult. Authentic information on depreciation is also not available. In order to remove these inadequacies a study of minor irrigation systems has been undertaken in 20 talukas in some of the States. The results when available would enable further refinement in estimation of minor irrigation potential created in different States and the order of depreciation that has to be accounted for.

9.71. The approach to minor irrigation development would have the following components :

(i) Groundwater exploitation.—

(a) Survey and assessment of potential ;

(b) Rationalisation of exploitation and checks against over-exploitation ;

(c) Coordination of programmes of rural electrification with installation of pump sets and energisation ;

(d) Provision of institutional credits ; and

(e) Improving infrastructural environment, such a consolidation of holdings, to attract larger flow of private investment.

(ii) Conjunctive use of ground and surface water.

(iii) Renovation of tanks.

(iv) Extension support.

9.72. In particular, survey and investigation work will have to be stepped up, especially in the north eastern region, during the next few years so that projects are formulated for implementation right from the start of this Plan. These investigations would also help the States to put ground water exploitation on a more systematic and rational basis and avoid over exploitation. As referred to earlier, in some States like Tamil Nadu and some areas of Punjab, Gujarat and Haryana, the lowering of water table is already posing serious problems. Legislative support to control over-expliotation may have to be considered seriously by the States, as Gujarat has done.

9.73. The National Commission on Agriculture has recommended conjunctive use of surface and groundwater. Though this is envisaged in Command Area Development (CAD) areas, not much has been done primarily due to the fact that the use of water has not been optimised on scientific lines. Too much water is wasted for field to field irrigation leading to waterlogging and delayed planting causing problems for multiple cropping.

9.74. The programme will have to be geared to scientific management of water. More emphasis will have to be laid on research effort towards finding appropriate farming systems including crop husbandry and animal husbandry. Extension support will need to be strengthened for establishing correct cropping patterns and a more efficient system of water use.

9.75. Likewise a great deal of coordination among various agencies will be required to reduce the time-lag between rural electrification, installation and energisation of pumpsets. Also, adequate linkages have to be built in for provision of credit for taking up programmes through REC-ARDC and state tubewell minor irrigation corporation.

9.76. Since depreciation is more pronounced in the case of old storage tanks, particular emphasis will have to be laid on their renovation as well as the treatment of catchment area of old and the new tanks so as to reduce siltation.

9.77. In order to ensure that the minor irrigation programme is implemented on correct lines and on schedule, a good deal of emphasis is required on interagency coordination and monitoring arrangements. Action has already been initiated in this direction. Further strengthening of the arrangements would be desirable.

9.78. Keeping in view the approach outlined earlier, the new strategy of minor irrigation development will comprise of the following :

(i) The most unexploited but promising areas are in eastern Uttar Pradesh and the eastern States in the Indo-Gangetic plain as well as in the Brahmaputra Valley. The major thrust in ground water development needs to be directed towards this region for immediate gains.

(ii) Considering the fragmentation of holdings in the country, public tubewells would appear to be the suitable system from the point of view of unit cost and equitable distribution of water. However, the capital cost involved being too high, there is no option than encouraging individual or group schemes, except in the case of deep tubewells, which are best done in the public sector.

(iii) While every effort has to be made to attract larger private investment, there will be need to mobilise sufficient institutional resources to supplement it. This will call for improvement of the lending system to ensure an adequate and timely flow of credit. In areas where the cooperative structure is weak—it would be necessary to revitalise LDBs by providing debenture support and adopting suitable organisational measures.

(iv) Areas of concentration of small and marginal farmers need to be specially identified for encouraging and implementing group schemes. Public tubewells would need to be given more emphasise for providing irrigation in areas with preponderence of small farmers and in areas where private tubewells are unlikely to make headway.

(v) Effort is necessary to reduce the cost of water lifting. New mechanical devices for lifting water have to be introduced and research in this direction has to be intensified.

(vi) In water scarce areas, greater accent has to be on storage schemes like tanks, khaddins, bhandaras etc. to impound rain water and

spread the period of irrigation. Renovation of derelict tanks should be an important element of the strategy for utilsing surface water.

(vii) High priority has to be accorded to the completion of the delivery system and field channels for efficient use of water resources.

(viii) Power requirements for irrigation pumps have to be met on priority basis and an uninterrupted supply ensured. This will call for a proper tie up between rural electrification of installation pumps and their energisation.

(ix) Adequate extension support would need to be provided to the cultivators. There has to be concentrated effort to educate farmers in efficient use of water and ensure transfer of right type of technology and timely supply of inputs.

(x) Subsidies are provided by Government to small and marginal farmers in respect of minor irrigation works either on individual basis or on community basis in areas which are covered by special schemes like SFDA, DPAP or CAD. Such an assistance is not available to the farmers outside these project areas. It will be desirable to consider extending similar facilities to other areas having development potential.

(c) *Command Area Development*

Objective and Strategy in the Fifth Plan

9.79. On the eve of the Fifth Plan, a review was carried out of identify the deficiencies in the development of command areas and to consider measures for optimising agricultural production in such areas. A number of policies and measures, both in the realm of irrigation engineering and agricultural development, were proposed. Programmes like fixing and enforcing of suitable cropping patterns, strengthening of extension, training and demonstration, planning and ensuring the supply of inputs etc. were considered essential for effective and efficient exploitation of the irrigation potential created in the command areas. The need for an integrated area development approach was also recognised requiring action in several disciplines like irrigation, soil conservation, agricultural extension and cooperation along with due support from credit and services organisations. It was also recognised that a unified agency, namely, the Command Area Development Authority could ensure a better coordination of the various disciplines at different levels. Therefore, such Development Authorities were proposed to be set up in areas covering the commands of about 60 major irrigation projects with a total culturable commanded area of about 15 million ha. It was estimated that this would benefit about 5 million small and marginal farmers.

9.80 It was clearly recognised that the success of the Area Development Programme would largely depend upon the ability of the existing institutions to provide institutional finance to the farmers. Where the land development corporations were not able to do so, the Authority set up in each command area were to be structured as a company under the Company Law for the limited purposes of ensuring flow of institutional credit to farmers. However, the existing organisations and agencies were proposed to be used for the execution of the works in the field, the advancement of loans to beneficiaries and the recoveries of loans.

Review of the work done during 1974—78

9.81 Thirty seven Command Area Development Authorities covering 47 irrigation projects were set up ; these are located in 102 districts in 12 states and cover about 14 million hectares of C.C.A.

9.82. The State Governments appointed senior officers of different disciplines as Command Area Development Commissioners Administrators of these Authorities. The Joint or Deputy Heads of Departments from the disciplines of agriculture, soil conservation, cooperation and irrigation engineering were also posted under most of these Authorities.

9.83. The financing the CAD Programme was on the following pattern :

(i) *Sharing of cost between the Union Government and State Governments*

Matching share between the Centre and the States in respect of cost of establishment of CAD Authorities, Soil Survey, preparation of farm plans, supervision, and for equity capital support to Land Development Corporations farmers service societies to be set up to mobilise institutional credit to farmers for construction of field channels, field drains, land levelling and land shaping.

(ii) *Assistance to be provided by the Union Government*

Subsidy for Non-farm development works as well as for ground water development to small and marginal farmers on the prevalent basis as in Small Farmers Development Agency (SFDA)/Marginal Farmers and Agricultural Labourers (MFAL) Schemes. or in accordance with the pattern prevalent in the States, as well as to disadvantaged farmers. Funds were also given in respect of the spillover requirement for items of works already sanctioned and taken up during the Fourth Plan which were in an advanced stage of implementation.

(iii) *State Government responsibility*

(a) Cost of strengthening the existing extension, training and demonstration organisations.

(b) Cost of strengthening of infrastructure, including communication system to handle the increased production.

(c) Remodelling and modernisation of delivery system above the one cusec outlet as well as provision of intermediate and major drains.

(d) Creation of the basic infrastructure like land for markets etc., and debenture contribution, etc. for cooperative institutions.

(e) Maintenance of roads, drainage and irrigation system.

9.84. By the end of March, 1977 soil survey was carried out in an area of 40.6 lakh ha., 84,000 km. of field channels were constructed and land levelling-land shapping done in 7 lakh ha, area. Besides, progress was made on other activities in the command areas.

Strategy for the Five Year Plan 1978—83

9.85. In considering the strategy for the Command Area Development Programme for the new Plan, it is necessary to ensure that the programme is reoriented cosidering the situation obtaining in each projects. Attention to development of an adequate infrastructure in these areas has not been commensurate with needs. It has to be recognised that these areas have greater growth potential and farmers would need more of subject-matter guidance as well as as other/supporting facilities.

The following components will require special attention in this regard :

(i) There is an urgent need for modernising the pre-Plan and earlier Plan irrigation systems. This work needs to be intensified in the next five years, so that better results are obtained from the huge investments made in the major and medium irrigation projects.

(ii) Drainage is to be given high priority.

(iii) The on-farm development works should continue to be given priority. As the complete package of on farm development programme is time-consuming and it is essential to ensure that water reaches every field, it is proposed to implement this programme in two stages.

(a) construction of field channels on a priority basis along the ridges, predetermined for a subsequent consolidation programme without waiting for the realignment and consolidation of holdings, and

(b) Land levelling and shaping including consolidation of holdings.

It is proposed that the field channels may be constructed as a part of the irrigation project or by the CAD Authority and the cost recovered from the farmers either directly over a period of time or indirectly by increasing the betterment levy or irrigation rates. The maintenance of the field channels has to be the responsibility of the farmers themselves.

(iv) The pace of consolidation and realignment of field boundaries and updating of land records has to be accelerated.

(v) Construction of essential roads in the command area may be taken up on priority in the road programme.

(vi) Ancillary activities like development of marketing and processing facilities, animal husbandry, farm forestry, etc. should also be organised by the CAD Authority for integrated development of the areas.

9.86. There is considerable scope for increasing the institutional financing for the CAD programme. A review of the procedure for obtaining institutional finances will have to be made and the procedures streamlined so that the farmers may be able to get institutional finance within a short time.

Target for non-farm works during 1978—83

9.87. It is targeted to have a full package of on-farm development works in 3 million ha. and to take up the construction of field channels and the related structures for 8 million ha.

(d) *Flood Control*

9.88. Flood Control is an important social and economic necessity. Systematic action was taken after the unprecedented and devastating floods of 1954 in several parts of the country. With the measures taken till the end of the Fourth plan it has been estimated that 7·9 million hectares have been afforded reasonable protection from floods. The present assessment is that the total area that was liable to floods is 25 million hectares, out of which 20 million hectares may be considered economically feasible of protection. During the four years of the Fifth Plan about 2 million hectares of additional area has been immunised against floods. This has been achieved with an expenditure of about Rs. 247 crores by the States and the Union Territories and another Rs. 40 crores by the Central Government.

9.89 It has been noticed that while the outlays for the successive Annual Plans have been increasing and more and more areas are being protected, the estimated value of damages due to floods has been paradoxically increasing. Though under various laws there is authority to prevent encroachment in the flood plan, it appears that there is quite a lot of haphazard and unauthorised encroachments. They lead to additional damage in some other area due to restriction of the flood plain. Some times the protected areas behind the embankments get affected either under abnormally high intensity of floods or by breaches of the existing embankments. Further, whilst the flood plain is to be kept free from valuable constructions, probably due to pressure of population and lack of space, valuable constructions are being made within the flood plain. This leads to larger damage monetarily when the floods are serious. There has been no scientific basis for estimating the flood damages nor are the statistics collected on a uniform basis. Encroachments in the riverine areas have not been identified. There is also no master chart from which the administration can judge the exact areas which will get affected by floods of different dimensions. Thus, the basic data and knowledge for dealing scientifically with the flood problem has many gaps. Taking all this into consideration, a National Commission on Floods (Rashtriya Barh Ayog) has been established by the Central Government with a request to go into all these problems and others and advise comprehensively on flood control. The National Commission on Floods has been asked to submit

interim recommendations which are expected by the end of 1978. The Five Year Plan 1978—83, in the meanwhile, is based on well accepted approaches to the current flood control problems and would be suitably reviewed as soon as the recommendations and the report of the National Commission on Floods are received.

9.90 Flood control measures at present comprise embankments, clearing the drainage channels and providing flood moderation reservoirs across the catchment areas of such rivers like Mahanadi, Brahmani etc., where such flood amelioration measures can be economically established. The approach has been on the multi-purpose and optimum development of the waters of various river systems including flood control. This improves the cost effectiveness of the flood control schemes and facilitate their implementation. The other important aspect of occurrence of floods, viz. the devastation of forests in the catchment areas of the rivers leading to heavy soil erosion and quick run off has so far not received much attention. Purely as a measure of silt control in some of the big reservoirs already established, soil conservation measures in the catchment areas have been carried out during the last 15 years. It is now agreed that such soil conservation measures and afforestation measures will be necessary in the catchment areas of all these rivers which are creating flood havoc. A start in some important river catchments has been made during 1976-77 and 1977-78. This programme will also receive further attention during the Plan.

9.91 As an ameliorative measure, flood forecasting and warning to areas that may be affected by floods is necessary so that the population in these areas can be evacuated in time and loss of human and animal life minimised. Considerable progress has been achieved in flood forecasting and forewarning the population that may be affected. This work is handled by the Central Water Commission.

Strategy for the Five Year Plan— 1978-83

(i) *Completion of Continuing Schemes*

9.92 Completion of Continuing Schemes including priority flood control works is the first priority. Some of the schemes of Fourth Plan have still not been completed. Some of the major schemes are : Lower Damodar Scheme, Mograhat Basin Drainage Scheme in West Bengal ; Buxar Koilwar Embankment Scheme, Bagmati Embankment Scheme in Bihar, Tapi Embankment Scheme in Gujarat ; Krishna-Godavari Delta Drainage Scheme in Andhra Pradesh; Lucknow Town Protection Scheme in Uttar Pradesh; improvement to Jhelum outfall Channel in J&K etc. In addition, Patna Town Protection Works also need to be completed early.

(ii) *Flood Forecasting*

9.93 There is need to extend flood forecasting network in the country to cover other inter-State rivers so far not covered by the Central Water Commission. Similarly there is need to modernise the methods and techniques.

(iii) *Preparation of Master Plans*

9.94 Efforts to prepare long range comprehensive Master Plans need emphasis. Such basinwise Master Plans should be completed within the next few years, if necessary, by earmarking outlays in the State Plans.

(iv) *Flood Plain Zoning and Regulation*

9.95 It is proposed to have large scale contour maps with flood areas delineated for transfer on the ground. Necessary regulation, legislation etc. is contemplated to prevent further encroachments. This activity shall have to be pursued more vigorously in the coming years by provision of adequate resources.

(v) *New Schemes*

9.96 Due to recent floods some new schemes have also assumed urgency. These are Govardhan Drainage System in Haryana, Rajasthan and U.P. ; Sahibi Basin—Najafgarh, Drainage System in Rajasthan, Haryana and Delhi ; embankments on the Yamuna in Haryana, U.P. and Delhi. It has to be ensured that all the participating States provide adequate and matching funds in their respective plans to complete these schemes expeditiously.

(vi) *Soil Conservation*

9.97 It is proposed to lay greater emphasis on this programme on watershed basis in the catchment areas of rivers causing floods.

(vii) *Anti-sea Erosion Works*

9.98 Some lands are permanently lost every year due to sea-erosion in some of the coastal regions, particularly in Kerala. Efforts to check this will be continued.

(viii) *Maintenance*

9.99 In order to stabilise the existing benefits from completed works and also to keep the works in a State of fitness, increased attention would need to be given to maintenance of flood works. States are to be persuaded to provide adequate funds in the annual budgets on a certain rational norm.

(ix) *Monitoring*

9.100 While monitoring of selected major irrigation projects at the Central, State and project levels has started during the Fifth Plan period, similar effort with respect to flood control programme has not been initiated. It is necessary that monitoring of major flood control works and inter-State projects are taken up by the Centre and State at the earliest.

(2) Manures and Fertilizers

9.101 In the farming practices the importance of organic manures and organic matter need to be fully appreciated. Organic manures, besides providing nutrients for plant growth and making up micronutrient deficiencies in the soils, help build up and maintain physical properties and fertility of the soils as well as enable a better performance of the chemical fertilizers when applied in conjunction. The recycling of organic waste material has also become urgent for saving energy. Organic manures give a loss for bacterial

action and help in the recycling of phosphate and potash. In some areas micro-nutrient deficiencies in the soils have become pronounced and recycling of the waste material and using organic fertilizers will rebuild the micro-nutrient level of such land. Keeping this in view, considerable emphasis is being laid on the use of organic manures.

9.102 Several programmes had been started for the utilisation of sewage and sullage, mechanical composting for utilisation of urban wastes and setting up of gobar gas plants. Good progress has been made in the setting up of gobar gas plants in some of the northern States and nearly 50,000 gobar gas plants are likely to be set up in the country by the end of this year. Similarly, 178 schemes for utilisation of sewage and sullage and 8 mechanical composting plants in big cities are also likely to be completed during 1977-78. In view of the potential available and the need for utilisation of different types of organic wastes, there is considerable scope to expand these programmes further.

9.103 During the Plan period, the collection of various types of organic wastes and dung and their proper use will receive particular emphasis. It is proposed to accelerate the programme of gobar gas and bio-gas plants in the country. However, it will be necessary to improve the design and reduce cost, for which research efforts will be further strengthened in a coordinated manner by the respective research organisations. The collection of cow dung and its replacement as fuel would also need to be properly organised. In areas where intensive animal husbandry development is taken up, the utilisation of dung for bio-gas plants would be given special attention. Experiments, now being conducted on making use of night soil, will be further pursued. Therefore, it is proposed to considerably enhance the outlay for this programme to nearly Rs. 15 crores as against Rs. 7 crores provided for the Fifth Plan. Simultaneously, stress will be laid on rural and urban composting to utilise natural waste matter for agricultural purposes. Emphasis in the coming years would also be placed on the use of bio-fertilizers wherever feasible, mulching in dry farming areas and the practice of green manuring as well as growing of legume crops in multiple cropping. At present, the available potential of plant nutrients through local manurial resources is estimated at about 9 million tonnes of nutrients (NP&K), out of which nearly 4 million tonnes are being utilised in the form of organic manures. This is almost of the same magnitude of nutrients as available from the use of chemical fertilizers Bulk of the unutilised potential in organic manures lies in farm wastes which are not at present being composted. Therefore, a major thrust would be to expand the rural composting programmes during the Plan.

9.104. The plants need quickly absorbable nutrients at certain stages of growth. Due to the limitations of organic manures in this respect, supplementation through chemical fertilizers would be essential. In our country, whilst aiming at an economic high productivity level, a medium level application of chemical fertilizers is expected to be the order of the day. The dosages contemplated in the near future are, however, on the low side when compared with the experience in countries with high productive agriculture. Therefore, if we aim at increasing productivity and meeting the requirements of intensive agriculture, it will be necessary to substantially step up the consumption of chemical fertilizers. It is proposed to strengthen the organisational arrangements for promotion and distribution of quality fertilizers for encouraging their balanced use. The fertilizer promotion policy will emphasise optimisation rather than maximisation of the dosage to enable extensive use at a lower dose to cover larger farming areas and farming population. An important objective of fertilizer promotion policy will be to lessen spatial concentration and promote fertilizer consumption in areas of low growth including a large number of irrigated districts and in areas where the distribution network is weak and communication inadequate. Special attention will be paid to making fertilizers available to the farmers at reasonable prices and at proper time.

(3) Seeds

9.105 Production of quality seeds will continue to be an important element of crop production strategy. The programme for production of certified seeds will, therefore, be pursued with added vigour. The States will be encouraged to set up State Seeds Corporations so that they could produce the seeds of varieties of local importance to meet their full requirements. The National Seeds Corporation will continue to provide support for the production of certified seeds of varieties of inter-State importance, production and supply of foundation seeds and facilities for inter-State marketing of certified seeds. The major emphasis would be to produce the certified seeds of hybrids to meet the requirements in full. High priority will be given for the production of breeder and foundation seeds, especially in the newly identified varieties, so that these could be quickly introduced over as large areas as possible. Facilities will, therefore, be created with the Agricultural Universities for production and storage of breeder seeds of varieties which are taken up under the programme of certified seeds production. Steps will also be taken to expand the programmes for production of planting materials of vegetatively propogated crops including horticultural crops, tuber crops and sugar-cane. In crops like cotton, pulses, oilseeds and fodders, there has been chronic short supply of quality seeds. Therefore, special steps will be taken to expand the programme for the production of breeder, foundation and certified seeds of these crops.

9.106 Seed law enforcement will be vigorously pursued to ensure high quality of seeds before dissemination to the farmers for raising crops. Buffer stocks of seeds of food crops will be maintained to meet the eventualities of natural calamities.

(4) Plant Protection

9.107 Plant protection measures will be strengthened to reduce crop losses and improve yields in field crop, horticultural crops and plantation crops. While efforts would be made to develop varieties resistant to various pests and diseases, an integrated pest control strategy will be adopted aiming at optimising the natural controlling factors and ensuring balanced and timely application of cheap insecticides, which are non-toxic and

fit in with the environment. Community participation in the integrated pest control would be promoted for making the control measures more effective. The present tendency to use too much pesticides, which make the operation expensive and lead to pollution hazards, needs to be contained. Special attention will be given to the control of pests in cotton, pulses and oilseeds as well as horticultural crops. A strong surveillance system will be developed with the key farmer as the base, who will be trained to detect pests and diseases and bring information promptly to the pest control centre. The surveillance system will be supported by the pest control organisation in each State to promptly attend to the pest problem, thereby making the operation cheaper for the farmer. The problem of weeds, which has assumed serious proportions, will need special attention.

(5) **Mechanisation**

9.108 To meet the power needs of agricultural operations, the first priority will be given to the utilisation of manual and bullock power in the context of the small farm and small farmer economy of the country and the availability of labour and draught animals. With a view to improving the efficiency and increasing the power input, it will be necessary to manufacture and propagate the use of suitable manually operated implements and to increase the draught power of the scrub bullocks through cross-breeding of cattle. In areas with variable and low rainfall, however, the lack of sufficient bullock power at the right time may be a constraint, when moisture conditions for proper agriculture prevails for short periods only. In such areas, it may be necessary to organise custom service of tractors at critical periods with a view to increasing the production of food and feed crops and fodder. The use of tractors would also be justified in very difficult terrain and for reclaiming large tracts of land for cultivation for the first time or for land shaping in difficult situations. Unrestricted mechanisation of agricultural operations will not, however, be in the interest of our country as it will severely worsen the rural unemployment problem. As such, a policy of selective mechanisation will be adopted. Some forms of mechanisation, like pumpsets, are beneficial because of their positive employment effect and, therefore, need encouragement. However, in order to put a restraint on their indiscriminate use, it would be desirable that the pricing, credit and fiscal policies in their case are not made unduly favourable, which encourage their use in preference to other labour intensive techniques. While this will be the policy approach during the Plan, a detailed study of the employment and productivity effects of tractorisation is proposed to be undertaken in view of the current controversy on the subject.

Research and Education

9.109 The major thrust of agricultural research in the Plan period will be on the development of techniques for bringing about a further improvement in terrestrial and aquatic productivity without detriment to the long-term production potential of soil and water. In addition to the stress on productivity improvement, work on imparting greater stability to production through intensive research on agro-meteorology and pest management will be undertaken. Early warning systems for pest outbreaks and alternative cropping systems to suit different weather models will be developed. Contingency plans supported by appropriate seed reserves will be introduced to insulate, to the extent possible, crop production from weather aberrations. Improvements in agricultural productivity in the past have been often associated with an increasing demand for non-renewable forms of energy. Since energy is likely to be a critical limiting factor in improving crop and animal productivity in the coming years, more intensive research on the use of recycling techniques, improving photo-synthesis and integrating organic and inorganic nutrient supply with special emphasis on microbiological improvements and pest management systems will be undertaken. In keeping with the national goal of making agriculture a potent instrument of not only meeting the food needs of our people but also of generating greater opportunities for gainful employment in the villages and thereby assisting in improving the purchasing power of those below the poverty line, research on all aspects of post-harvest technology will be greatly intensified. It is only through improved post-harvest technology that higher value-added products can be prepared in the village itself, besides avoiding quantitative and qualitative losses to the harvested produce. Also, through improved post-harvest technology various organic wastes and cellulosic material like straw can be enriched and made into complete food for farm animals, thereby helping in the establishment of fodder and feed banks to support the animal husbandry programme introduced for the benefit of small and marginal farmers and landless labour.

9.110 The organisation of research during the Plan will be through Agricultural Universities now numbering 21 in the country, Central Institutes managed by the Indian Council of Agricultural Research (ICAR) and All-India Coordinated Research Projects. Agricultural Universities will be the principal agents for conducting research on all aspects of crops, farm animals, fisheries and forestry in relation to the major farming systems of each State. Research in the area of agro-forestry involving silvi-pastoral systems and silvi-animal husbandry or silvi-aquaculture systems will receive particular emphasis. The breeding of quick yielding leguminous shrubs and trees for providing fodder, fuel and fertiliser through the fixation of atmospheric nitrogen will receive particular attention in the Agricultural Universities. It is proposed to make suitable funding arrangements to enhance the capability of Agricultural Universities to carry out location-specific research in the major-agro-ecological zones of each State. State Governments will be requested to assume greater responsibilities in supporting research and educational institutions for which adequate budgetary provisions would be made.

9.111 The conservation, cataloguing and utilisation of our major agricultural assets will receive added attention. For this purpose, the National Bureau of Soil Survey and Land Use Planning and the National Bureau of Plant Genetic Resources will be strengthened. In addition, it is proposed to organise a National Bureau of Animal and Fish Genetic Resources. Through these agencies, steps will be taken to prevent the erosion of valuable genes, thereby preserving for posterity the fruits of thousands of years of natural

and human selection. In addition to the on-going research programmes on the reclamation of alkaline soils, research on the improvement of the productivity of areas affected by soil and water salinity will be intensified. Acid soils will also be given greater attention.

9.112 The Central Institutes of ICAR will be suitably strengthened for enabling them to carry out mission-oriented basic research, applied research and appropriate educational and training programmes. Important farm animals like the buffalo and goat, which did not receive adequate scientific attention in the past, will be given special attention. In addition, research on all aspects of soil health care and fertility will be strengthened. All aspects of water management research will receive added stress in the light of the vastly expanded programme for irrigation. It is also proposed to organise research in the field of Agricultural Economics by carrying out a micro-level analysis, through Agricultural Universities, of the biological and socio-economic constraints which are responsible for the vast untapped yield reservoir existing even at current levels of technology in most farming systems. While the Central Institute of Cotton, established during the Fifth Plan at Nagpur, will intensify research on improving the yield potential of rainfed cotton, including the development of hybrids of short and medium staple varieties, centres for research on major oilseeds like groundnut and pulses will be established at suitable Agricultural Universities or Central Institutes. Possibilities for achieving a yield breakthrough in jute, possibly through hybrid jute, will be explored.

9.113 Farming systems research will receive intensive attention through multi-disciplinary operational research projects. The major systems to be studied will include—

(a) Multiple and relay cropping in irrigated areas ;

(b) rainfed farming semi-arid and arid conditions involving water harvesting and run-off recycling on a watershed basis ;

(c) inter-cropping and mixed cropping ;

(d) mixed farming involving crop-livestock, crop-fish and crop livestock-fish integrated production systems ;

(e) kitchen gardening including homefish gardening in appropriate areas ;

(f) three-dimensional cropping in garden lands involving an optimum use of the cubic volume of space available ;

(g) integrated sea-farming involving a suitable blend of culture and capture fisheries ; and

(h) demonstration of latest techniques of water use in irrigation commands.

In addition to giving immediate attention to techniques which can help our farmers and fishermen to derive benefits from existing technology, steps will be taken to strengthen mission-oriented basic research through the establishment of National Research Centres of Excellence headed by Professors of Eminence. Such National Research Centres will pay attention to basic research in areas such as photo-synthesis, nitrogen fixation, animal reproduction, animal nutrition, organic recycling, phosphorus management, integrated pest management, and the other fields recommended by the National Commission on Agriculture.

9.114 In the field of agricultural education, stress will be on training farm graduates who can return to a career in farming. Additional Krishi Vigyan Kendras will be developed to spread the latest technical skills to farmers and fishermen through the process of learning by-doing. In addition to formal and non-formal education through Agricultural Universities and Krishi Vigyan Kendras, training programmes for developing cadres of self-employed soil-health-care, plant-health-care and animal-health-care workers will be promoted.

The major training strategy in such programmes will be to combine certain universal principles of soil health, animal and plant health, etc. with the unique practical problems faced by the farmers in the particular village where the trainee comes from. Extension education programme will be strengthened by enlarging the National Demonstrations Programme so as to include both systems and factor demonstrations. Mixed farming, fresh-water acquaculture and mariculture demonstrations will be new features of the Plan.

9.115 International collaboration in research will be strengthened in an appropriate manner within the context of technological self-reliance. Technical co-operation among developing countries in agricultural research will be fostered.

9.116 Linkages between research and development agencies will be strengthened through appropriate institutional devices. A special quota will be provided in the Agricultural Research Service of ICAR for secondment to development projects on the basis of felt-needs. Manpower training will be accorded the highest priority. Wherever training facilities are not available, steps will be taken to set up appropriate institutions. Research and training in the area of control and other specific problems of the north-eastern Himalayan region, other hill and tribal areas will receive special attention.

Animal Husbandry and Dairying

Policies and Objectives

9.117 Livestock production practices in India have been found to be not only labour intensive but also labour distributive and rural in nature. The National Commission on Agriculture has therefore identified that promotion of livestock production through the weaker sections of farmers in the rural areas could be relied upon as a major instrument of social change, for supplementing the income and providing a large scope for employment for these sections of people in the rural areas. The income elasticity of demand for livestock products, such as milk, eggs and poultry, mutton, wool etc. is also high and the demand for these products is anticipated to grow at a faster rate. With the recent advances in technology relating to livestock husbandry and product processing, a rapid growth in the production of livestock products can be achieved. But one important consideration that has to be kept in view is the organisation of proper

marketing for the ultimate benefit of the producers and consumers. The Five Year Plan 1978—83 therefore aims at adopting in a large measure the strategy recommended by the National Commission on Agriculture in its interim reports and the final report, which seeks to reserve a major share of this industry for the weaker sections of farmers and to adopt an integrated area development approach mainly based on a system of producers cooperatives.

9.118 The principal objectives of animal husbandry and dairying programmes in the Plan would be as follows :

(i) To augment considerably production of livestock products, such as milk, eggs and poultry, wool and mutton etc.

(ii) To promote adoption of improved methods of animal husbandry such as better feeding and breeding, proper management and animal health control for improvement in the productivity of livestock.

(iii) To organise marketing of produce through a functional system of cooperatives on the lines similar to those adopted by dairy cooperative unions in Gujarat.

Targets of Livestock Production

9.119 Against a base level annual production of milk & milk products of 23.2 million tonnes in 1973-74, a level of about 27.5 million tonnes in 1977-78 is anticipated. It has been proposed to reach an annual production level of 35.5 million tonnes by the end of the Plan. Egg production is anticipated to reach a level of 10,200 million per annum by 1977-78. Taking into consideration the gradual build up of export market and the infrastructure already created for promotion of this industry, a growth rate of 10 per cent could be assumed and the target for annual production by 1982-83 would be 16,000 million eggs. An additional annual production of 2 million kg. of fine wool and 5 million kg. of medium apparel wool, would be aimed at by the end of the Plan. The projected targets are summarised below :

Table 5 : Targets of Livestock Production

Sl. No.	Item	Unit	Likely level of production in 1977-78	Targets for 1982-83
(0)	(1)	(2)	(3)	(4)
1.	Milk and Milk Products .	Million Tonnes	27.50	35.50
2.	Eggs	Million Numbers	10,200	16,000
3.	Wool	Million kg. (Greasy)	31.00	38.00

Approach and Strategy

9.120 *Cattle & Buffalo development and milk production* : The policy for development of cattle and buffaloes would lay major emphasis on increasing the productivity of stock in order to bridge the gap between the availability and demand for milk and milk products by the end of 1982-83. In respect of cattle, this would be substantially achieved through planned crossbreeding of cattle with exotic dairy breeds. In order to bring about 10 million cows under such a crossbreeding programme, a comprehensive project will have to be evolved envisaging the use of frozen semen technology for artificial insemination. This programme would be implemented in all the districts to be covered by Operation Flood Project and under the Integrated Project on cattle breeding, social forestry and food for work through Bharatiya Agro-Industries Foundation. Crossbreeding with frozen semen would also be introduced under the cattle development and dairy Schemes to be implemented by the State Governments in different area development projects.

9.121. As crossbred bullocks have been found quite useful for work compared to the vast majority of non-descript type of bullocks, promotion of use of crossbred bullocks for work through demonstrations and extension methods would be built into the crossbreeding projects. Programmes for development of important indigenous breeds of cattle would also continue. In all these programmes, breed development would be attempted laying great emphasis on progeny testing of bulls in farm herds and field stock.

9.122 Buffaloes constituting about 34.5 per cent of the total bovine milch stock would continue to remain as an important dairy animal in most parts of the country. Therefore, research and development programmes of buffaloes would receive increasing attention. Efforts will be made to identify, pool and multiply superior buffalo germ-plasm, through establishment of large buffalo farms in and around which progeny testing programme would be undertaken. Research will be intensified to evolve improved technologies for larger use of frozen buffalo semen in artificial insemination at the field level.

Poultry Development

9.123 Poultry production has made rapid strides in the last decade. The annual egg production recorded an increase of nearly 300 per cent from 2,500 million eggs in 1961 to about 10,000 million eggs in 1977. The production of poultry meat through broiler industry is also making a breakthrough and the annual broiler production reached a level of 17 million in 1977-78 as compared to 4 million in 1971. A beginning has also been made in the export of eggs and poultry. As a result of the coordinated poultry breeding programmes, strains of high-yielding poultry capable of producing 260 eggs a year have been evolved. Broiler strains capable of attaining a live weight of 1200 grams in 8 weeks and 1500 grams in 10 weeks have also been evolved for commercial exploitation. The poultry industry has become more or less self-sufficient in respect of modern poultry equipment which, in recent years, have found export markets.

9.124 So far, growth in the poultry sector has been mainly through large and small commercial operations

mostly confined to urban and semi-urban areas. Special poultry production programmes recommended by the National Commission on Agriculture would be implemented in a large number of districts in order to shift poultry production to the rural sector and to provide additional employment and supplementary income to small and marginal farmers and agricultural labourers. These programmes would be organised mainly as a cooperative enterprise as is being attempted under dairying. Poultry production research and development would be intensified for evolving high-yielding strains/lines indigenously so as to quickly eliminate dependence on import of parent/grand parent stock of inbred lines. In order to organise these functions effectively, the establishment of a Poultry Corporation of India is envisaged. Setting up of more pureline breeding farms would be encouraged. Broiler production, processing and marketing would receive greater attention through establishment of broiler breeding farms and linking the mwith coordinated poultry breeding research projects. In order to formulate, coordinate and monitor at the national level various poultry production policies and programmes with special reference to development and propagation of genetically superior stock, establishment of a national grid for marketing, promotion of export etc. an executive authority, namely. National Poultry Development Board would be set up on the lines of the National Dairy Development Board.

9.125 Marketing of eggs and poultry both for internal markets and for export would be channelised through the organised sector, NAFED would build up a separate poultry marketing division to take a commanding share of marketing of eggs and poultry at National and regional levels and in exports. The State Governments would be encouraged to set up Egg and Poultry Marketing Organisations either in the cooperative or corporate sector. Emphasis will also be laid to take up scientific rearing of ducks and duck production in rural areas.

Sheep and Wool Development

9.126 The gap between the availability and requirements of wool for all the sectors, namely, worsted yarn, carpet manufacture and khadi and woollen manufacture has remanied more or less steady in the past. The present trends indicate large export potential for carpets and larger requirements of wool for the worsted and woollen manufacturers. There is a good export market for live sheep for mutton. Therefore, there is immediate need for launching a massive programme of improvement in sheep for wool and mutton. It is proposed to implement intensive crossbreeding programmes with suitable exotic fine or medium wool (dual type) breeds to cover nearly 10 million ewes in the different States through the establishment/strengthening of large scale sheep breeding farms and setting up of over 100 intensive sheep development projects. To augment mutton production, extensive crossbreeding with breeds like Corriedale and special efforts to increase the number and quality of indigenous mutton type sheep would be taken up. Marketing of wool and sheep would be organised through cooperatives of sheep breeders at district level and wool boards and corporations at state level. Selective breeding of goats of indigenous breeds and crossbreeding with exotic breeds to get types which can be stall fed would be introduced. Pelt and fur production through introduction of Karakul sheep and Pashmina goat and Angora rabbit would be promoted in suitable areas.

Other Livestock

9.127 Crossbreeding in pigs would be concentrated around bacon factories, urban markets and tribal areas. Intensive pig breeding-*cum*-marketing schemes would be taken up in the North-Eastern States which are high-consumption and high-priced areas for Pork Horse breeding farms and stud centres would be set up for development of horses and ponies for sport and transport. For the economy of the desert areas camel development would be organised through camel breeding farms, camel stud centres and organisation of breeders cooperatives.

Feeds and Fodder Development

9.128 The area under fodder crops has remained more or less static during the last one or two decades. The National Commission on Agriculture has drawn attention to the enormous gap existing between the availability and requirements of feeds and fodder and had recommended progressive increase in the area under green fodder cultivation. The future approach will be to promote fodder production as an integral part of crop husbandry so that a mixed farming system is promoted as a rule particularly with the small land holdings. A massive farmer-oriented extension programme will be taken up by the State Governments for evolving and popularising high-yielding varieties of fodder crops, introduction of fodder crops especially leguminous fodder in existing crop rotations and production and distribution of high quality seeds. Production of high quality fodder seeds would be streamlined by assigning well-defined responsibilities to appropriate agencies for production of breeder, foundation and certified seeds. Development of extensive grassland and creation of grass reserves would be taken up by the State Forest Departments. Under the social forestry programme, the Forest Departments would allocate a fair share of the marginal lands and degraded forests for cultivation of fodder trees. In arid and semi-arid regions, large blocks of land would be developed as range lands for rotational grazing of livestock and for collection and storage of grasses in fodder banks.

9.129 Cultivation of coarse grains primarily for feeding of livestock will be popularised. The prices of livestock feed ingredients show wide fluctuations depending upon seasonal demand and supply conditions and quantum of exports with the result that livestock producers, in general, and poultry farmers, in particular, are adversely affected. Therefore, a definite pricing policy will have to be adopted in respect of livestock feed ingredients. This could envisage (i) price control on feed ingredients, which are not used for any other purposes and (ii) in respect of feed materials, such as brans and molasses, which are used for other purposes, a dual price system and reservation of certain proportions as livestock feed at controlled prices.

9.130 All efforts will be made for the increasing use of agricultural industrial by-products and wastes

in the manufacture of compounded feeds and researches will be continued for the use of various unconventional feed ingredients for incorporation in compounded livestock feeds. Proper collection and utilisation of carcasses of dead animals and slaughter house wastes for conversion into meat meal, bone meal, blood meal etc. would be taken up in all areas wherever such collections would be economically feasible.

Animal Health

9.131 Improvements in the productivity of livestock, particularly through introduction of exotic germ-plasm calls for simultaneous building up of an efficient animal health service. The National Commission on Agriculture has also recommended the need for organising a veterinary public health service for safeguarding human health from zoonoses and food borne infections through milk, meat, egg and fish. It is therefore proposed to organise a comprehensive animal health control system, which will include strengthening of diagnostic and investigation services, strengthening of veterinary biological products stations, building up of an animal disease intelligence service, organising veterinary public health service and developing quarantine stations at inter-State and international borders. Special attention would be given for the production of biologicals against diseases, like foot and mouth disease in cattle, Marek's disease in poultry and Pox in sheep. National programmes on eradication/control of rinderpest, contagious Bovine pleuropneumonia, Marek's disease and Pullorum disease would be organised.

Dairy Development

9.132 As a result of the various dairy development projects the daily throughout of milk in the public and cooperative sector dairy plants has risen from 28.80 lakh litres in 1973-74 to 55.28 lakh litres by the end of 1977. It is estimated that at present the share of the organised sector in terms of fluid milk is about 5.5% and in product manufacture 3.8 per cent. Under Operation Flood Project, the distribution of milk in the four metropolitan cities had risen from the pre-project level of 9.02 lakh litres to 17.67 lakh litres in November, 1977. With the setting up of a number of feeder balancing dairies in the milk sheds of the neighbouring States, regional milk grids have been developed to supply milk to the cities.

9.133 The policy of integrated approach to dairy development envisaging various aspects of production, collection, processing and marketing of milk would, by and large, be adopted by all dairy development projects in the public sector and cooperative sector. Special emphasis will be given to milk production enhancement programmes through supply of technical inputs and services in the milk sheds of all dairy projects including those set up under Operation Flood I. Except in certain special areas, dairying will be organised, by and large, through the cooperative or the corporate sectors. However, the ultimate objective would be to foster the growth of dairying through a two-tier system of functional cooperatives with producers societies at the village level and unions at district level. Some progress has been made already in the development of regional Milk Grids under Operation Flood Project for marketing of milk in four metropolitan cities and this would be extended to form a National Grid to cover marketing of milk in a large number of towns and cities. Dairy Projects would cater to the needs of all the towns with a population of one lakh and above so as to raise the share of milk supplies through the organised sector to 15 percent.

9.134 So far, organised dairying schemes had concentrated mainly on handling of fluid milk. In the Plan special attention will be given to manufacture and marketing of indigenous milk products. This will assist milk producers in remote areas who cannot be linked easily to fluid milk market projects and help organisation of small scale units for catering to local needs.

9.135 A rational milk pricing policy will be evolved and recommended to promote production and marketing of cow milk based on two-axis pricing policy suggested by the National Commission on Agriculture. Milk pricing will need to be rationalised to even out surpluses in certain seasons through differential seasonal prices and marketing milk of higher fat levels.

9.136 In order to promote consumption of milk, the milk distribution systems will need to be diversified. The rural cooperatives would be geared to ensure supply of milk on a priority basis to the local consumers in and around centres of production.

Fisheries

Policies and Objectives

9.137 Special attention will be given to augment fish production, as it is one of the sectors eminently suited to assist a large mass of economically weaker and backward sections of the rural community. Fisheries offer a large scope to fulfil the basic objective of production-cum-full employment envisaged in the Plan. Increased fish production would considerably help in filling the gap between the availability and requirements of high quality protein subsidiary foods for internal consumption at reasonable prices. The present practice of granting fishing rights in public waters by the State Governments, Panchayats etc., would be reviewed and modified so as to ensure achieving the twin objective of creating a base for increased production and raising the economic standards of the communities already engaged in or inducted into fishing occupations. Consequent on the declaration of exclusive economic zone of 200 miles from the coast line there is additional need for ensuring optimum utilisation of marine resources. Intensive exploration and judicious exploitation of marine resources would help in further boosting up our export trade in shrimps and other high value fish and fish products.

9.138 The principal objectives of fisheries development programme in the Plan would be as follows :

(i) To step up considerably the annual fish production both in marine and inland sectors.

(ii) To organise inland fisheries production based on individual family basis and on high labour intensive, low investment technologies

in order to improve the socio-economic conditions and to exploit to a large extent the development potential of this occupation.

(iii) To organise intensive surveys for marine fishery resources assessment and exploitation of such marine resources equitably by the small fishermen operating country boats, other using mechanised boats and larger entrepreneurs and business houses having off-shore and deep sea fishing vessels.

(iv) To improve and diversify considerably the systems of processing and transport of fish, promote consumers' acceptance and organise marketing of fish and fish products in the internal markets in order to ensure reasonable returns to the fishermen and a fair price to the consumers.

Targets of Fish Production

9.139 Against a base level production of 20.4 lakh tonnes (marine 12.70 lakh tonnes and inland 7.70 lakh tonnes) in 1973-74, the production is anticipated to reach a level of only about 25 lakh tonnes (marine 16 lakh tonnes and inland 9 lakh tonnes) in 1977-78, which is much lower than the targeted production of 30.20 lakh tonnes under the Fifth Plan. This is attributed to shortfalls in introduction of mechanised fishing boats and large fishing vessels, production of fish seed and in the inland water areas brought under intensive aquaculture. The strategy for the Plan would be mainly directed to remove these lacunae; and considerably large increase in production is envisaged both under the margine and inland sectors in order to achieve the level of high gross demand projections recommended in the final Report of the National Commission on Agriculture. The following table indicates the targets of fish production in the Plan :

Table 6 : Targets of Fish Production

Sl. No.	Item	Unit	Likely level of production in 1977-78	Target 1982-83
(0)	(1)	(2)	(3)	(4)
1.	Inland Marine . .	Lakh tonnes	9.00	12.00
2.	Marine	-do-	16.00	22.00
	TOTAL		**25.00**	**34.00**

Strategy for Fish Production

9.140 In marine fisheries, the traditional coastal fisheries sector engaging nearly one lakh country crafts operated by small fishermen would be substantially assisted to improve their efficiency through use of boats of improved design and supply of modern gear materials. Considerable expansion of infrastructural facilities of a large number of coastal fishing villages could be attemptd to improve the handling, storage, processing and transport of fish catches to internal markets. Additional mechanised boats would be introduced, in particular, along the coasts of Andhra Pradesh, Orissa and West Bengal. In addition, incentives would be provided to popularise diversified fishing operations in order to fully exploit pelagic, columnar and demersal fishing resources.

9.141 As regards off-shore and deep-sea fishing, priority attention would be directed towards research and commercial surveys and experimental fishing for making fishery resource assessment and to chart and map potential fishing grounds to facilitate and promote investments in deep-sea fishing industry. Considerable increases in marine fishery fleet through incentives and judicious selection in size and type of fishing vessels would be assisted.

9.142 Along with the introduction of large number of mechanised boats and deep-sea fishing vessels for exploitation of marine resources, it would be necessary to protect the interests of the small boat owners, who mainly fish in coastal waters. Conflicts between small fishermen, operating traditional fishing crafts, mechanised boat owners and the operators of larger fishing vessels will be avoided through suitable legislative measures and delimitation of fishing zones for each type of fishing vessels. An adequate machinery, for example, coast guards would be identified for enforcing such discipline.

9.143 Development of berthing and landing facilities for fishing vessels and creation of adequate infrastructural facilities for improved handling, storage and processing of catches would be taken up in an integrated manner at the existing fishing harbours and at a number of new locations.

9.144 In the inland sector, in spite of the large production potential already available in respect of water resources and technology, the production breakthrough so far has not been adequate. Considerable demonstration and extension activities would be taken up to increase the average production per hectare up to an extent of 1500 kg. This could be achieved by large-scale and intensive efforts on fish seed production through establishment of large fish seed farms, adoption of induced breeding techniques, transport of seed and fry and promotion of composite fish culture techniques. As the commercial viability of fish seed production has been established, efforts will be made to promote fish seed production through private enterprise. All these activities would be extended to a large number of districts through a network of fish farmers development agencies. Additional fish production will also be undertaken through development of large water areas under bheels, swamps, oxbow lakes and through systematic development of reservoirs.

9.145 Brackishwater fish farming, which has been identified as a potential source of augmenting the income of individual fishermen families and increasing production of prawns for exports would be considerably expanded and organised mainly as a cooperative enterprise of fishermen families in these areas.

9.146 Pilot projects on commercial trout farming would be started in Himalayan States, like Himachal Pradesh, Jammu and Kashmir and Uttar Pradesh. Private enterprise would be encouraged to enter into this activity.

Training and Extension

9.147 In order to cater to the expanding needs of fishery experts, technicians and operatives, the training institutions catering to various levels under the Central and State Governments would be considerably strengthened and expanded. Special attention would be given to training of personnel required to man the ever increasing fleets of mechanised boats and off-shore and deep-sea fishing vessels. Extension organisations both for marine and inland fisheries development would be expanded to propagate adoption of modern technologies in marine and inland fish production.

Processing and Marketing

9.148 The State Governments would be assisted in the organisation and efficient functioning of fishery corporations for undertaking commercial and economic activities, such as fish seed production, reservoir development, marine fisheries and processing and marketing of fish in the internal markets and for exports. A cold chain scheme linking up major production centres and internal marketing points would be taken up through a consortium of public sector and private sector enterprises. This will ensure remunerative price to the producers and enable the low and middle income consumers at a distance from the coast to consume marine products.

Forestry

9.149 The objective of forestry development will be to meet the economic demand for forest products and maintain and improve the quality of the environment as well as provide substantial employment, particularly to the poorer sections of the society. The main thrust of the development programme will be on accelerating production forestry, substantially enlarging social forestry including farm forestry and linking forestry development with the economy of the people living in and around forest areas.

9.150 For taking up a dynamic programme of production forestry, institutional changes have been brought about in the Forest Departments in the States and Forest Development Corporations have been set up in several States for the development and utilisation of forests and promotion of vital forest based industries by utilising institutional funds. The policy in the coming years will be to strengthen these arrangements and substantially expand the programmes of plantation of quick growing species and long rotation crops to balance the requirement of fuelwood, timber, pulpwood and such industrial raw materials as can be really forecast in our perspective planning. It is envisaged that during the next five years the combined programme of the Forest Departments and the Corporations for production forestry will cover 2,75,000 hectares annually on an average. The main strategy in production forestry programmes will be to place emphasis on quick growing hard wood species and tropical pines. This requires strengthening of the infrastructure for planning by the State organisations and also by the Centre, the latter by creating the Forest Survey of India to assist in identification of production forest areas, demand and supply projections, supply capabilities, industrial development etc. It also requires the modernisation of central nurseries and other infrastructural development by the State Corporations and promotion of integrated wood industry.

9.151 Social forestry will be undertaken by creating forest raw material resources on degraded forest areas, waste lands, Panchayat lands, lands on sides of roads, canals and railway lines. Social forestry, particularly farm forestry and extension forestry, can be the only practical way to increase the area under forests and tree growth. An important objective of the social forestry programme will be to meet the needs of fuel wood and small timber in the rural areas and replacement of cowdung as fuel. Other objectives are to increase fodder supply and protection of agricultural fields against wind and provision of recreational needs.

9.152 The strategy for social forestry will be to select fast growing as well as such species as are suitable for village level industries as side-line occupation and those which provide fodder for livestock and fruits out of the trees planted. Certain families in the neighbourhood areas could be identified for wage employment in social forestry plantation. Such families can also be involved in 'Taungya' cultivation, where suitable, to undertake intercropping by legumes and production of green manures, provided, however, that the primary use of such land for forestry should not be disturbed. In order to secure the involvement of Panchayats, the Forest Departments could share 50 per cent of the profit realised from the plantations on Panchayat lands. The Panchayat could be placed in charge of distribution of prunings in the plantations and grass removal. A conscious effort is also to be made to regulate grazing. An innovative programme of tying up social forestry with the stock improvement in the annual husbandry sector will be developed. A promising productive species, viz. Kubabul (Leucaena leucocephala) which can be grown on marginal land, will be the main species in this programme. The programme aims at production of leaf fodder on the techniques like tea production. Similar programmes, using suitable species, are being developed for tasar, muga and lac production, where the leaf is the production base.

9.153 The farm forestry programme will be taken up as a distinct programme under which the Forest Department would be raising seedlings and providing necessary extension support to the individuals and institutions who would take up planting programme around their house sites, agricultural lands, ponds, institution buildings, etc. Voluntary agencies and schools and colleges may be involved in the production of seedlings in the interior areas.

9.154 Both the social forestry programme and the plantation programme under production forestry are highly labour intensive. In order that the employment goes mainly to the local people, it should be the Forest Department's endeavour to utilise the services of existing voluntary organisations or to promote new voluntary organisations for taking up plantation activities. This will secure the involvement of the local people and will reduce the cost of protection of forests. In

order that the local people benefit fully from the employment prospects thrown up by the forestry activities, intermediaries in forest working must be eliminated. During the next five years, stress would be on the promotion of various labour cooperatives and tribal cooperatives or departmental works or a combination of all in the matter of forestry works. The endeavour should be to promote cooperatives of landless labourers and other weaker sections of the population only, guided by the technical staff of Forest Departments, and vested interests should not be allowed to come in.

9.155. Experience has shown that forest based industries like paper, pulp and plywood have been overexploiting the forest resources in their areas. This has created a situation of not only limited availability of the right type of wood in the vicinity of the industrial units but has also exposed the forest areas to erosion and deterioration. Particular attention would, therefore, be devoted to the conservation and protection of forests, in addition to the production and social forestry, in view of their environmental value. In the captive forests serving the industrial units, special emphasis would be laid on regeneration and replantation programmes on the basis of the working plan for extraction. Protection forestry would be essential in areas where the slightest disturbance of the forest cover is undesirable. It is necessary to identify such areas in each State and Union Territory and take measures to protect the forests. Such protected forests would also offer scope for creating natural reserves for the preservation of threatened species of fauna and flora. As recommended by the National Commission on Agriculture, the Forest Departments should demarcate at least a few nature reserves to preserve forest areas and wetlands under virgin or near virgin conditions to serve as gene pool reserves. In hills and river valley catchments, forest management would be for production and conservation keeping in view the need for checking erosion. minimising degradation and maintaining environmental balance.

9.156. Special emphasis will be laid on the linking of the forest economy with the economic development of the tribal population living in or near the forests. The forest-based development programme should be so oriented that it can give a permanent support to the tribal economy. The right of collection of minor forest produce without restrictions or royalty by the tribals will be ensured. The Forest Departments either directly of through tribal cooperatives would organise collection and marketing in order to ensure remunerative price for the benefit of the tribals. Outside the reserved and protected areas, fuel wood plantations and horticultural complexes can be created as a part of social forestry on waste land with which identified tribal population could be linked with the right of usufruct to meet their requirements of timber, fuel and fodder. The tribals may be allowed the collection of fuel on silvicultural principles and market it for a living after making suitable arrangements for regenerating such areas adequately. Similarly, horticulture can be practised in such lands with the land continuing to belong to the State Forest Department but the tribals having limited rights to the usufructs. The same approach can also be adopted for minor forest produce plantations to be raised by tribals. The entire extension effort would thus be to convert the tribal economy based on destructive use of trees to a system in which the tribals begin to take care of the trees. Moreover, trees can be raised for sericulture, lac, etc. and linked to the diversified economy of the tribals. It is noticed that a proper pricing policy is not being followed for forest products used by the industries with result that the reasonable rights of the tribals are being denied. The situation needs to be rectified by evolving a pricing policy based on principles of equity and by charging the industrial user a proper price. The problem of shifting cultivation would be tackled through a composite programme of forestry and grassland development with horticulture and agriculture. A pilot project has already been introduced on this pattern in north eastern India.

9.157. The programme for raising shelter belts along the coasts will be intensified. Casuarina is a comparatively fast growing tree eminently suitable for being raised as shelter belts along the sea coast to prevent blowing of sand inland. Such shelter belts have been extensively raised in Orissa, Andhra Pradesh and Tamil Nadu. It is possible not only to have other crops like cashew and coconut behind the casuarina shelter belts but the shelter belts, as experienced in Andhra Pradesh, can take the first brunt of cyclonic winds to protect inland habitation. The main difficulty is to have quite wide and continuous belts as all coastal lands are not owned by the Government. In such cases where land cannot be put to any other use, this should be acquired if necessary for raising coastal plantations. These shelter belts, apart from affording protection, give valuable commercial return in the shape of fuel wood.

9.158. For supporting a much expanded forestry programme under various agro-climatic conditions, research, particularly in the high priority fields, and widespread education in forestry will need considerable strengthening. The involvement of some agricultural universities in research on some aspects of forestry has been partly achieved and needs to be pursued further. Among the important areas of research, special stress will be given on different aspects of social forestry like indentifying species and techniques for rapid propagation. In respect of various research centres, the emphasis would be on re-orienting their activities for production, demonstration and extension in addition to research. These centres would also attend to the problem of control of pests and diseases of important species, so that the results could be of immediate practical use.

9.159. No development can be taken up without the support of trained manpower to execute the programme in the field. The requirement of Forest Departments for trained manpower would be with regard to personnel in the Indian Forest Service, State Forest Services, Forest Rangers, Foresters and Forest Guards. Efforts will be made to strengthen the training programmes so that trained personnel are available in adequate number to take up the forestry programme. One of the ways to augment trained manpower would be to include forestry as one of the subjects in the agricultural universities, so that the agricultural graduates could be with a short training, inclucted into the forest services in the States. It would be necessary to depute a competent forester to the agricultural uni-

versity for imparting education and training in forestry. Another way would be to select personnel from amongst agricultural graduates even without any forestry training and train them at the Forest Research Institute for induction as Forest Rangers and into the State Forest Service. For the lower levels, short courses on specific topics, combined with practical work, could be run in the field by competent foresters to turn out adequate number of field level personnel. All these alternatives would be pursued for making trained manpower available.

9.160. In order to meet the requirement of commercial forestry and improve the management capability of forest corporations, a management Institute has recently been set up. The Institute will collaborate with the Indian Institute of Management, Ahmedabad for a period of 1½ to 2 years to imbibe the management culture that is necessary in the establishment of this Institute. It will also develop the "core knowldege" by initiating some projects for training and action. After this period steps will be taken for the establishment of a full fledged autonomous institute independent of IIMA, but centred on a client system.

Services and Infrastructure

(1) Agricultural Credit

9.161. A substantial step up in the volume of credit is contemplated to take care of the growing requirements of minor irrigation and other programmes of agricultural development, rural electrification and rural industries. According to the available information the level of rural credit during 1977-78 would be about Rs. 1650 crores for short-term loans, Rs. 235 crores in medium-term and Rs. 410 crores in long-term loans. In order that the expansion of rural credit is rapid enough, it would be desirable to plan for doubling of its current level in about three years. It is, however, observed that large areas are not sufficiently covered by short-term credit. Nearly 52 per cent of the credit supply during 1976-77 (Cooperative Year) is reported to be in five States viz. Andhra Pradesh, Gujarat, Maharashtra, Punjab and Tamil Nadu. The main constraint in the credit flow has been low recoveries, high level of overdues and consequent ineligibility of a large number of cooperative institutions for refinancing. Therefore, it will be imperative to improve upon the management of rural credit to achieve more equitable distribution for the benefit of larger section of the population for production finance at a reasonable rate of interest.

9.162. A major objective of the agricultural credit policy would be a progresive institutionalisation with a multi-agency approach and the earmarking of an increasingly larger share for the weaker sections. The share of small and marginal farmers, tenants, agricultural labourers and share croppers in cooperative as well as commercial banks' lending is only about one-third. Special effort would be made to meet the credit requirements of scheduled castes and tribes on priority basis. In any credit rationing regime, no productive activities and urges of the scheduled castes, landless labourers, artisans, etc., would be allowed to suffer because of inadequate credit support from institutional agencies. The main burden of providing credit would continue to be on the cooperative sector. The commercial banks would also be expected to assume greater responsibilities for supplementing the efforts of the cooperative credit agencies. As far as possible, the deposits collected by commercial banks in rural areas would be made available for investment in rural development. The loaning operations of the ARDC would also be considerably expanded and diversified.

(2) **Cooperation**

9.163. Credit has to be made available to the farmer, the artisan and the selfemployed worker in the rural areas for their short, medium and long-term requirements at one place close to their own village. The poorer sections must be able to get their reasonable requirements of credit for creditworthy occupations at reasonable rates of interest and easy terms of repayment of capital loans. The multi-purpose primary cooperative with the necessary facilities to do all this will be the type of rural structure which will be the main unit for this programme. Such units should be formed on the lines of the Farmers' Service Societies or the Large sized Multi-purpose Societies (LAMPS) in the developed areas and the backward areas respectively. Meanwhile rural branches of the commercial banking system or the regional rural bank system should purvey such multipurpose credit to the areas with weak cooperative coverage or areas where the demand for credit is high. Without such provision of easily available credit systems, the Integrated Rural Development Programme with special thrust towards full employment and removal of poverty will be difficult to execute. The imperative of this infrastructure should be fully realised and period-bound implementation should be ensured.

9.164. The cooperative system is the most widely distributed and organised credit system which can readily take up the vast task of purveying short, medium and long-term credit to the rural areas. But, all along, the system has been heavily biased towards the more affluent sections of the rural community even though lip service has been paid to helping the poorer classes. Resolutions to bring in efficient management and to help the poorer sections have remained mostly a dead letter. It is, therefore, necessary that in this Plan period the following steps to reorganise and reorient the cooperative system are taken ;

(i) Reorganisation of primary agricultural credit societies into strong and viable multi-purpose units on the model of Farmers' Service Societies or LAMPS, so that farmers, artisans and the selfemployed get all the services at one point.

(ii) Efficient management of the reorganised societies by professionally trained full-time paid managers/secretaries.

(iii) Simplification of the loaning procedures and arrangements to issue passbooks with authorised credit limits to farmers, artisans and selfemployed to facilitate the supply of credit according to their periodic requirements. This will call for suitable legislation and land reform measures.

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(iv) Reduction of overdues in the cooperative institutions for which vigorous steps should be taken by the State Governments.

(v) Greater reliance of commercial banks on financing primary credit societies. The State Governments will have to decide where they would like the commercial banks to supplement the efforts of the cooperative institutions. In those areas banks should be given all the required facilities.

The programme has to be faithfully implemented in a phased manner starting with the Integrated Rural Development blocks in the first two years and completing it throughout the country in the five year period.

9.165. Exploitation of the poorer sections of the community by moneylenders and through a bonded labour system is still widely prevalent in the country. Even though debt redemption laws have been passed, for lack of an appropriate and efficient system of credit including credit for consumption, the laws have only added to the misery of the poorer sections. Therefore, speedy implementation of a multi-purpose credit system with efficient non-politicalised management is imperative. This system should also purvey consumption credit to enable the poorer sections to take effective part in the production system without being exploited in wages or returns.

9.166. Each reorganised society would be provided with a godown to enable it to undertake activities like supply of inputs and essential consumer goods and marketing of agricultural and other produce. The higher level institutions would also be suitably strengthened so as to be able to supervise and guide the lower level institutions. Stress would be laid on the mobilisation of larger deposits and removal of regional imbalances in cooperative development.

9.167. A dynamic and integrated programme of agro-business, marketing and processing would be taken up, which would considerably enhance their contribution to the gross national product and substantially and to gainful employment opportunities in the rural areas, especially in areas taken up for intensive development. Fertilizer production in the cooperative sector would be further expanded and the cooperative institutions would be enabled to distribute a larger share of fertilizers than at present.

9.168. The consumer cooperatives would be made the backbone of the national public distribution system. The growers' cooperatives would be linked with the processing and consumer cooperatives in the cities and other urban habitats. Steps would be taken to provide services of at least one cooperative department store in all cities and towns with a population of 50,000.

9.169. Efforts for the orientation of cooperative credit policy in favour of the weaker sections of the society would be intensified. Specific policies would be framed to reduce the rate of interest chargeable from these sections of the village community. The existing cooperative plan schemes for weaker section in SFDA projects and the functional societies, e.g. labour cooperatives, rickshaw pullers cooperatives, dairy cooperatives, poultry and piggery cooperatives, would be continued and intensified.

9.170. The existing national cooperative federations would be further strengthened and their functions oriented for effective discharge of responsibilities towards their constituents. They will also be enabled to plan for the future development of their respective movements. Special efforts would be made to make the cooperative movement autonomous but fully responsive to the needs of the poorer sections of the community, self-reliant, efficient and honest in the discharge of their duties and free from undue outside interference and excessive official control. The attempt would be to build up the movement based on enlightened participation of a broad-based membership, as envisaged in the national cooperative policy resolution adopted at the All India Conference of State Ministers of Cooperation held in December, 1977.

(3) Storage and Warehousing

9.171. A large stock of foodgrains has created a problem of proper storage. Out of the total storage capacity of 14.84 million tonnes available with the public agencies like the Food Corporation of India, Central Warehousing Corporation, State Warehousing Corporations and cooperatives, a capacity of about 10.3 million tonnes is available for storing foodgrains. This is, however, supplemented by CAP storage and rented storage. The storage capacity would, therefore, need considerable augmentation to hold the buffer stock of foodgrains and other commodities for which price support operations are contemplated.

9.172. A larger programme for construction of storage facilities in the public sector and, with suitable financial support, in the private sector will be taken up for efficient storage and distribution of agricultural commodities and essential consumer goods. Captive capacities would be made available to the public warehousing agencies like FCI, CWC and SWCs to link up the requiremnts of storage and the public distribution system at the State and national levels. In order to feed the public distribution system and maintain the prices of essential wage goods at reasonable levels, the public agencies will be required to store a larger quantity of foodgrains as well as oilseeds, pulses and cotton in which case there is usually some constraint of supply. In order to diffuse the pressure on centralised storages, it would be a deliberate policy to encourage multipurpose cooperative societies at the primary level as well as the specialised marketing societies to expand their capacities at the primary and regulated market levels to meet the conditions of interseasonal gluts and scarcities. Suitable storage capacity will also be increased for inputs, especially fertilizers and seeds upto the village level with a view to streamlining the distribution to meet the seasonal requirements. Programmes are also envisaged for encouraging scientific farm level storage with a view to reducing the losses due to the ravages of rodents and stored grain pests. The services to farmers will be strengthened further for making available pesticides and for arranging training and demonstrations.

(4) Agro Processing

9.173 The future growth of the processing industries would be decentralised so that agro-processing would be taken up in the areas of production, especially by the cooperatives. Thus, agro-industrial complexes will be developed linking production with processing and marketing so as to maximise agricultural production, minimize food losses and generate more employment in producing areas besides giving a remunerative price to producers. Village level processing would also be encouraged in commodities like oilseeds. Modernisation of rice milling industry will be stressed for improving the recovery and quality of rice and its by-products. Technological changes would be encouraged also in the small scale huller sector. Efforts would be made to popularise the improved technology of pulse processing to achieve higher recovery of dal. In case of cotton, new type of gins and presses, which can efficiently meet the processing requirements of long, extra long and finer varieties of cotton, would be encouraged in the cooperative sector. Efforts would be made to improve the efficiency of the small cane crushers to ensure higher recovery of juice. Further expansion of the large-scale bakeries will not be allowed and the expansion would be in the tiny and cottage sector.

9.174 Higher priority would be accorded for expanding the processing and preservation of fruits and vegetables. Steps would be taken to encourage the manufacture of fruit juice concentrates in the producing areas. With a view to popularising the consumption of fruit juice beverages in competition with synthetic beverages, the setting up of bottling plants and vending machines will be encouraged at centres of consumption.

(5) Agricultural Marketing

9.175. The development of the marketing structure would aim at ensuring remunerative price to the producer of agricultural commodities thus narrowing down the price spread between the producer and the consumer and reducing non-functional margins of the traders and commission agents. To achieve this objective, comprehensive and rapid expansion of regulated marketing system, having organic links with the primary markets, is envisaged. Linkages with the major consuming centres will also be established. The success achieved in States like Punjab and Haryana, where regulated markets have been established in major producing areas with linked up satellite markets in the rural growth centres would be aimed at in other areas where intensive production is taken up. The regulated marketing system has also proved a good source for generating income to the marketing boards and for use for rural infrastructure. The regulated market complex will also include facilities for grading and for monitoring of prices. With a view to improve the financial resources of the Panchayats and involvement of the Panchayati Raj system in community welfare works, the regulated markets could be utilised for generation of resources by levying a surcharge. The development of regulated markets is proposed in command areas and terminal markets especially in areas where commercial crops like cotton, jute, tobacco and important non-traditional crops are produced and sold in weekly markets and 'hats'. Cooperative marketing and distribution and banking will also be linked with the regulated markets. These markets will cover all the major crops. Separate market yards are proposed for livestock, fish, fruits and vegetables. The State Marketing Boards and Marketing Directorates will play an important role in planning suitable location and facilities for market development.

9.176. The arrangements for quality control, enforcement and inspection and improvement in grading will be streamlined. The number of testing laboratories will be increased and the programme of grading at producers' level will receive greater attention especially for commercial crops.

Agriculture Administration and Extension

9.177. Agricultural administration has not been given the attention that was, in the past, given to revenue or police administration with the result that policy goals have not been supported with an implementation machinery capable of translating these goals into specific administrative practices and equipped with inbuilt devices to detect and correct shortcomings. Administrative skill would be an important input in agricultural development, and it is the absence of this input rather than paucity of physical and intellectual resources that has acted as a constraint on growth.

9.178. A strong administrative structure would be necessary to support the various programmes of agricultural growth and meet the demands of the people as pressures of a growing agriculture develop. An effective transfer of known knowledge to the field would be essential for improving the productivity of the different farming systems in the country. This would require the transformation of the administrative and extension machinery into a strong technical organisation so that the available knowledge does not remain unutilized and is pressed into service without having to encounter major bottlenecks. The re-organisation and rationalisation of agricultural administrative and extension set-up in the States ; initiated in some States during the Fifth Plan, will be progressively extended to cover the entire country, keeping the inter-regional diversity in view.

9.179. Seventy to eighty per cent of all VLWs in the States would require to be placed directly under the State Agriculture Departments. Keeping in view the emphasis on an integrated and mixed farming approach, woven around the economy of the farm family, it is essential that the VLWs attend to the various farm production activities including crop production, animal husbandry, farm forestry and fisheries all the year round. The agricultural VLWs and other field-level functionaries under various agricultural programmes would be integrated into a single organisation covering agriculture and allied activities. The VLW-coverage of farming families will be rationalised so as to intensify extension efforts in areas having large agricultural development potential and under intensive agricultural programmes. The field-level extension func-

tionaries would be supported by competent teams of specialists in agronomy, plant protection, farm management and other areas as per local requirements. State Seed/Demonstration Farms will be strengthened to carry out extensive adaptive trials of research findings of universities on an agro-climatic basis.

9.180. The educational and technical competence of the extension functionaries would need to be substantially improved through intensive pre-service and in-service refresher/specialised training courses and educational facilities taking into consideration the multi-disciplinary role of the functionaries in the field of rural development. In order to meet the increasing needs of training of field level extension personnel and other functionaries, the Gram Sevak/Sevika Training Centres are proposed to be revitalised and suitably strengthened. The Agricultural Universities will be involved to provide guidance in formulation of training programmes and also for providing training to the trainees. The Farmers' Training Centres will be established in areas not hither to covered and where special programmes of rural development are taken up. The training of farm women and young farmers with emphasis on the development of skills in agricultural pursuits will also be taken up more vigorously. Besides, to enable technical officers to discharge their responsibilities efficiently as administrators of agricultural development programmes, it is proposed to provide for suitable arrangements for their training in agricultural extension and management at an All India Institute of Agricultural Administration and Management, as recommended by the National Commission on Agriculture.

9.181. The administrative set-up will have to be substantially strengthened at the State headquarters as well as divisional (if any), district and sub-divisional (in larger districts) levels with responsibilities increasingly assigned to senior technical personnel. Authority, responsibility and project planning and monitoring would be decentralised as much as possible. Linkages with village and block level panchayat and voluntary organisations would be strengthened. The agricultural administration may be placed under the Zila Parishads in those districts where they are doing good work and have shown keen interest in agricultural development. The re-organised extension set-up will direct its special attention to the improvement of the economic condition of the weaker sections of the rural community such as small and marginal farmers, agricultural labourers, rural women/unemployed youth, tribal and hill farmers. Selective use of various communication media for effective extension would have to be ensured with special accent on inter-personal communication methods.

9.182. Inter-departmental coordination and linkages between extension, research and input agencies and farmers' and panchayat organisations will have to be ensured at appropriate levels. For this purpose, coordination committees should be set-up at block and district levels to ensure adequate coordination amongst official and non-official agencies and autonomous bodies connected with agriculture and rural development.

Rural Development

(1) *Integrated Rural Development*

9.183. The strategy for rural development in the plan will be integrated rural development (IRD). Experience of various rural development programmes in the earlier plans has shown that a mere project approach or a sectoral approach is not adequate to lead to an overall development of the area and distribution of benefits to local population, particularly the weaker sections of the society. The distribution of unemployment and poverty and the potential for development of agriculture and related activities vary widely from region to region and also within regions. Different areas in the country are at different levels of development and have varying degrees of potential depending on local endowments. The efforts will now be to make the programmes area specific and utilise the local endowments for growth for social justice and full employment. It will, therefore, be necessary to plan for integration of various programmes and establish appropriate linkages for optimal utilisation of local endowments consistent with the plan objectives, local needs and environmental balance. The full employment aimed at is on a fair remuneration for the work done and the effort made so that a fully employed family can go above the poverty line.

9.184. The integrated rural development now envisaged will be specially focussed on the target group comprising small and marginal farmers, agricultural labourers and rural artisans, whose economic improvement is an important concern of rural development. This approach will help a substantial part of the Scheduled Caste and Scheduled Tribe families who are amongst the most disadvantaged sections of the population. The approaches in the on-going rural development programmes, viz. SFDA, DPAP and CAD which are broadly area development programmes having the uplift of small and marginal farmers and the landless labourers as their main thrust, are proposed to be utilised according to their relevance in particular areas to achieve the twin objectives of generating employment opportunities and increasing production.

9.185. The new approach will aim at integrating field programmes reflecting the economic activity of the rural family whose employment and development is the basic objective. It is proposed to bring this about by developing the primary, secondary and the tertiary sectors. In the primary sector programmes for agriculture, animal husbandry, fisheries and forestry development will be intensified. In the secondary sector programmes for villages and cottage industries as well as small scale industries, skill formation and supporting services will be substantially enlarged and strengthened. Tertiary sector will be developed by creating facilities for organised marketing, processing and allied activities so as to absorb increasing number of local people. The programmes of animal husbandry will be specially oriented to include a good part of the rural labour population with special preference to Scheduled Caste families who are generally a major component of the landless. The social forestry programmes will be suitably oriented to give a fodder base to such

labour families for animal husbandry development. In the fisheries programme, special steps will be taken to see that the backward sections of the population like fishermen class are given suitable rights of exploitation.

9.186. The following developmental programmes will, as a first approximation, be integrated :

(1) Programmes of agricultural development including efficient utilisation of land and water resources with scientific technology available ;

(2) Programmes of animal husbandry as a subsidiary occupation mainly directed to small peasant households and agricultural labour households so as to maximise utilisation of by-products in the farm and, at the same time, aiming at commercial production of animal husbandry products. Necessary infrastructure for commercialisation would be inbuilt in the programme ;

(3) Programmes of inland water and brackish water fisheries to maximise output of fish per unit of water and develop as an important occupation for the fishermen classes and such other backward classes in the economy ;

(4) Programmes of marine fishery including harvesting of natural resources through trawlers, mechanised boats and country boats, keeping in view the need to maximise employment of the poorer section of the fishermen population and preventing unhealthy competition between the three sectors to the detriment of the poorer classes ;

(5) Programmes of social forestry to provide a base for fuel and fodder in the economy and with special earmarking of usufruct for the poorer sections of the community for expolitation as an occupation or as fodder for an animal husbandry programme. Tasar, eri and muga and lac rearing by the poorer sections should be inbuilt into the programme ;

(6) Programmes of farm forestry through the small peasant households as a subsidiary income and also for maximising use of land ;

(7) Village and cottage industries including handlooms, sericulture, bee-rearing etc. as a full or part-time occupation to the artisan classes of the rural population ;

(8) Service sectors of the rural economy as self-employment sectors for the poorer families both as a means of providing for a felt-want in the economy and as a means of better livelihood to the poorer sections ; and

(9) Labour programmes of skill formation and labour mobility to meet the needs of organised labour for development works and of the nature of employment guarantee programmes where necessary.

9.187. Programmes of agriculture, animal husbandry, fisheries and forestry will be brought into focus in one compact form of maximising land, water and cropping in a holding through a mixed farming approach. This will be the core of the IRD programme. The main thrust in agricultural development will be command area development in irrigated areas and water-shed management in rain-fed areas. As further experience is gained on the nature of local resources and the socio-economic factors for and against growth, programmes will be refined through local planning.

9.188. Drinking water supply, rural roads, education, nutrition and health programmes are urgently required for rural areas. The criteria for taking up these programmes and the production and employment programmes may be widely divergent. Linking up of the development programmes with those of infra-structure and social services may result in their relative importance being diluted. Therefore, the infra-structure services programmes would form part of their respective sectors and be settled on the basis of established criteria and priority. The Coordination Committee in the area would coordinate the implementation of the infra-structure and social services programmes allotted to that area.

9.189. However, the agencies which will be intrusted with the formulation of the block level plans would be required to prepare comprehensive area plans for production and employment generation as well as the requisite infrastructure and social services.

9.190. A major effort will be made to formulate area specific plans at the grass root level. With this in view, it is proposed to formulate comprehensive block level plans and identify programmes for development of the area which aim at making full use of the local endowments. To be successful, a block level plan will have to be in harmony with the district and the State Plan. The district plan will take into consideration the block level micro-plans and give the necessary district level supporting infrastructure and tie up the coordination aspects between deparments, institutions and organisations. The district level planning, monitoring and evaluation units should be developed in all States so that integrated rural development planning is also done at the district level.

9.191. Active involvement and participation by the people, for whom the developmental programmes are meant, can go a long way in making the programmes have a fuller impact and becoming more successful. The voluntary agencies, who are engaged in social and developmental work, are close to the people and have the capacity to motivate the rural population for community participation in developmental programmes. With a view to utilising this potential, it is contemplated that as a policy, voluntary associations doing social and developmental work in the rural areas should be induced into IRD approach so as to provide a foil to the completely departmental or local body approach to the problem. The voluntary associations and professional institutions will be involved in formulation and, where the capacity exists, also in implementation of block level plans. Suitable voluntary agencies, which do not at pre-

sent have local based structures, will be supported to develop such structures to enable them to take up planning and implementation of rural development programmes. Besides this, industrial and business houses will also be inducted into the rural development as many of them have evinced interest following the tax incentive given in the last budget.

9.192. Out of a total of approximately 5100 blocks in the country over 2950 blocks are covered by one or more of the three special programmes, viz. SFDA, DPAP and CAD. Out of these blocks, 2000 will be distributed to the States on acceptable priorities to intensify the work in these blocks so as to increase employment and productivity. During each year of the Plan another 300 blocks will be selected on certain criteria of priority and will be taken up for intensive development so that by the end of the Plan, full employment would have been attempted and substantially reached in 2000 blocks and in 1500 blocks the work would be in various stages. This will leave 1600 blocks for the next five year period starting April, 1983, and full employment to be reached in 3100 blocks by 1988.

9.193. The Scheduled Caste population are generally the landless in the rural areas and are also the disadvantaged sections of the community and in the category of the poor. The integrated rural development programme should, therefore, be of special relevance to this class of the rural population if we claim to give full employment and remove poverty from the rural areas. It is, therefore, imperative that, as a first priority, the blocks in the country where the Scheduled Caste population is above 20%, will be brought into this programme during the Plan period. Thus, with the special thrust now being proposed to include the Scheduled Caste families in the full employment and poverty amelioration programme in the Integrated Rural Development blocks, this disadvantaged class will be substantially helped during this Plan.

9.194. The present level of funding including subsidies in the existing blocks covered by the DPAP, SFDA and CAD programmes will be continued during 1978-79. Additional outlays will, however, be provided in 2000 blocks which are taken up for further intensive development. Funds will also be made available for the new 300 blocks which will be taken up during 1978-79. The pattern of financial assistance in various programmes and funding by the Centre and the States in subsequent years will be reviewed and rationalised.

9.195. Land owning even of a marginal holding is associated with status in the rural community. In order to give the Scheduled Caste families in the rural areas who are generally landless, a status in the community, it is planned to facilitate such labour families to buy small holdings. Necessary help for getting loans from the long term credit system for this purpose on reasonable terms and facilities for cultivation of the same will be in-built in the Integrated Rural Development Programme.

9.196. The question of labour mobility has not received adequate attention in the past. The comprehensive area plans may not absorb all the labour in a particular area specially in areas having high incidence of unemployment. At the same time, experience shows that a number of big irrigation projects or construction works are faced with labour shortage. Therefore, suitable plans need to be devised for moving a part of the labour force, particularly the hard core of agricultural labourers who have practically no base in the village, to large irrigation and other construction projects for long term employment. In addition, labour movement from labour surplus areas to labour scarcity areas during sowing and harvesting seasons may have to be organised in a planned manner to overcome seasonal shortages of labour in those areas. Suitable organisational structures may have to be created to mobilise on voluntary basis labour in surplus areas for such movements.

9.197. It is contemplated that a number of contact points with the rural community will be established during this Plan period in programmes of health, education, sanitation etc. It will need all the energies and enthusiasm of the youth of this country to ensure the success of this programme. Unemployed educated youngmen of the locality should be given reasonable opportunities to participate in these programmes and make a modest living out of them.

9.198. Growth centres will be developed in the rural areas for integrated rural urban growth. Opportunities for self-employment in such growth centres will be developed as far as possible to absorb unemployed educated youth to run service centres, custom service units and retail shops for farmers' requirements. Suitable credit systems will be developed through the cooperatives and rural banks to lend money to such youth for the enterprise on reasonable and easy terms generally on personal security. The rural industries organisation that is being developed during this Plan in the districts will give the necessary consultancy and coverage to such programmes and supervise the proper utilisation of funds.

(2) *Sub-Plan for Tribal Areas*

9.199. For the first time, an integrated sub-plan approach for tribal development was adopted during the Fifth Five Year Plan. Keeping in view the past experience of area development through Tribal Development Blocks, a new strategy was evolved to formulate separate sub-plans for areas of tribal concentration. These sub-plans continue to operate in 16 States and 2 Union Territories. About 2/3rd of the tribal population in the country is estimated to be covered by these sub-plans.

9.200. The broad objectives of the Tribal Sub-Plans are (i) to narrow the gap between the levels of development of tribal areas and other areas and (ii) to improve the quality of life of the tribal communities. To achieve these objectives, elimination of exploitation of tribals in land alienation, indebtedness, bonded labour, mal-practices in exchange of agricultural and forest produce etc. was given the priority in Fifth Plan. Excise and forest policies were reviewed and suitable measures taken to end exploitation in tribal areas. In development programmes, priority was

given to agriculture and allied sectors, irrigation facilities and forest-based and other industries. Infrastructure like roads and rural electrification was linked with the economic programmes. Agriculture programmes were oriented so as to provide increased income to cultivators. Efforts were made to induce a change in the traditional way of agriculture. Programmes for imparting training in agro and forest based industries were taken up so as to create opportunities of gainful employment. In many States Tribal Development Corporations were set up to play a key role in bringing about a new relationship between the tribal and the market economy through an integrated credit-cum-marketing service. The most backward groups among the tribal communities, many of them at pre-agricultural stage of economy, were identified and special programmes were taken for their development. The administrative structure in tribal areas was reviewed and restructured so as to provide effective services to the tribal people. The areas under the Fifth Schedule have been rationalised so as to provide a more effective protection to the tribals and for better implementation of plans.

9.201 For operational purposes the tribal sub-plan areas have been organised into Integrated Tribal Development Projects (ITDPs). At present there are 178 ITDPs under implementation. It is the level at which entire developmental efforts have been integrated. The problem of the areas, resource potentiality and felt needs of the people have been tackled under the programme implemented in these projects.

9.202 The programmes under the Tribal Sub-Plan are supported by the sectoral outlays in the State Plan, Central programmes and institutional finance available for different programmes. Besides, special Central assistance is provided to the Tribal Sub-Plan to fill in the gaps so as to make the delivery of services complete and to accelerate the programmes under State and Central Plans. In the Fifth Plan the quantum of outlay in the tribal sub-plan was determined from out of the divisible part of State Plan on the basis of (a) total population, (b) geographical area, (c) the relative development and (d) state of services in the sub-plan areas. Similarly, the Central Ministries were required to identify the programmes relating to tribal development concerning their sectors.

9.203 The outlays determined for tribal areas were made non-divertible. Therefore the States with large tribal population introduced separate budget heads under each major functional head. In other States the entire outlay on the Tribal Sub-Plan has been brought under a single demand. Further, steps to ensure non-divertibility of earmarked funds at the Centre level are under consideration.

9.204 In the Five Year Plan (1978-83) the policy in regard to tribal area development will continue to be similar to that in the Fifth Plan but programmes intensified and corrected where they are weak. Programmes will be taken up to achieve the objective of narrowing the gap between the levels of development of tribal areas and other areas and bringing a qualitative change in the life of the tribal community, more rapidly. To translate these objectives into action, a strategy for consolidating the gains of protective measures will be adopted and programmes to provide full employment and to extend educational and health services will receive equal emphasis. Some further areas of tribal concentration will be added to the sub-plans by identifying pockets of 10,000 population living contiguously of whom at least 50 per cent are tribal people.

9.205 The programme will be reoriented in consonance with the national objective of full employment within 10 years. The concept of full employment will, however, have to be defined in the case of tribal areas keeping in view their specific socio-economic situation. There is a marked disparity in the economic standards of the tribals living in the areas of their concentration compared to the people in the surrounding areas. This disparity in economic standard is well discernible, in terms of the pattern and productivity of agriculture and receptivity to modern techniques, size of holdings, the per capita income, quantum of under-employment as well as absence of market and marketing facilities and scope for subsidiary occupations. In some tribal regions, the problem of unemployment is quite serious as a result of depletion of resources as in the western region or alienation of land as in eastern region. In other areas, the major constraint in full utilisation of resources is sociological and technological as in the central region. Here the effective utilisation of manpower may not be more than 200 man days in a year. The strategy for each of these areas will be suitably defined. Though tribal sub-plans represent area-based programmes with focus on the development of tribal communities, the desired emphasis on the weakest sections has not emerged. It will be the endeavour now to identify these groups and orient the programmes suitably so as to help them attain reasonable economic well-being.

9.206 While programmes of a local nature will be given attention at the ITDP level, the major thrust areas of the Tribal sub-plan of a State would be identified; these thrust areas could be different for the different regions of the country. Some of the major thrust areas such as shifting cultivation, horticulture, credit-cum-marketing, minor irrigation, forestry-oriented programme, programme for landless, pasture development, animal husbandry and education have been identified after a review of States' efforts in implementation of sub-plans. A clear perspective of these programmes will be prepared and other economic programmes will be built around them. Primitive communities will get special attention. In the process of development the traditional craftsmen in the tribal areas have been particularly adversely affected because they are facing an unequal competition from the products of large scale industries. While the ITDPs have identified these groups, suitable programmes have yet to be concretised. In those regions where forests occupy a large area, balanced development of the tribal community and their economy based on development of forestry and allied activities yill be planned. In the tribal areas around the industrial and mining complexes the tribal communities have been pushed back and many of them now form the lowest strata in the new industrial society. Not much attention could be focussed on these areas in the past. In future industrial and mining projects, the development of the

zones of their influence will be planned as a part of the project so that, balanced development is possible and the tribal communities become co-sharers in the fruits of development. A comprehensive and systematic effort will be initiated to alleviate the conditions of the tribals in the hinterland of the existing complexes.

9.207 The present education pattern is not producing the desired results in the tribal areas. There is a large wastage at different levels and many areas do not have basic infra-structure. The location of the schools in relation to the settlement patterns, devising new institutional structures appropriate for the area, the school timings, suitability of the present vacation period, the need for lowering educational qualifications for teachers to attract local people will have to be examined and re-oriented so as to enable the tribals to participate in the development efforts more effectively. The curriculum and reading material are to be so prepared as to have relevance to the local community requirements. Low literacy pockets of primitive communities will be given the highest priority and a package of services will be provided for them. In those areas where intensive economic activity has started, like the hinterlands of indsutrial and mining complexes, growing urban centres, investments will be made in education to improve employability of tribal people. Efforts will be made in the educationally backward regions to increase the output at the matric level, provide technical content and to bring down the number of drop outs. In health a special plan will be formulated for even geographical distribution of health services and for eradication of the problem diseases like yaws, leprosy, malaria, VD, etc. and preventive methods devised.

9.208. In the new Plan the Central Ministries will play an important role in the development of tribal areas. Besides supplementing the efforts of the State Government in their respective sectors, each Ministry will be required to give priority to and earmark outlays for the tribal areas from within its plan. The Ministries will provide necessary guidance and supplement the States' efforts in selected priority areas. Each Ministry will designate senior officers who will be incharge of the programmes of the concerned sector in the tribal sub-plan areas at Central as well as State levels.

(3) *Hill Area Development*

9.209 The hill areas have considerable variations in the physio-geographic and agro-climatic conditions and the resource endowment. The hilly areas are generally economically backward and the resource base of the different hill areas will call for specialised strategies for development. The problem of raising socio-economic development of these areas is not merely one of financial allocations, but also of developing a proper strategy and appropriate programme of development.

9.210 Though the development of the hill areas is primarily the responsibility of the concerned State Governments and Union Territories, the Central Government is also anxious to do as much as it can for setting the norms for the development of these areas by taking up pilot programmes. The efforts of the State Governments of Assam, Tamil Nadu, Uttar Pradesh, West Bengal and the States covering Western Ghats region which have typical areas for experimentation and setting of norms will be supplemented through Special Central assistance.

9.211 The main objective of undertaking development programmes/projects in the hilly areas will be to raise the living standard of the local population. The programmes will be specifically oriented to the local conditions so as to benefit directly the local people. The formulation and implementation of programmes will be in consonance with topography, agro-climatic conditions, the availability of natural resources, the characteristics of the population and the peculiarities of the socio-cultural structure. The nature of linkages and interaction between the plain and hill areas have to be properly appreciated. While selecting the programmes priority will be given to the schemes which are employment-oriented and are based on the maximum utilisation of local resources.

9.212 To facilitate the development of the hill areas of the North Eastern India, North Eastern Council covering the North Eastern region of the country will continue to coordinate the overall development of this region and special funds are likely to be provided for developmental schemes benefiting this region. For the development of Western Ghats, a High Level Committee having representation of the concerned States will continue to help in evolving suitable strategies and recommending programmes of development which are likely to benefit the local people. In the States of Assam, Tamil Nadu, Uttar Pradesh and West Bengal sub-plans for the integrated development of hilly areas would be prepared.

9.213 While formulating the plan, emphasis will be laid on having well defined linkages namely :—

(i) Development of sheep, cattle, poultry and dairying would have to be linked with marketing, pasture development and provision of health cover.

(ii) Crop husbandry and plantation crops are to be linked with soil and moisture conservation and land management practices.

(iii) In the North Eastern region control of shifting cultivation will have to be given priority.

(iv) Development of horticulture and forestry will be linked with programmes relating to the opening of inaccessible areas and marketing.

(4) *Desert Development*

9.214 The National Commission on Agriculture had drawn attention towards the magnitude of the problem of desertification in the hot arid regions of Rajasthan, Gujarat and Haryana and also to cold desert areas falling in Ladakh District of Jammu and Kashmir State and Spiti Area of Lahaul and Spiti District of Himachal Pradesh. The high pressure of human and cattle population was considered to be a major factor leading to the deterioration of the desert areas in hot arid regions. The problems of development of hot deserts were examined by the

National Commission on Agriculture and specific recommendations made to arrest the deterioration.

9.215 A beginning has been made for development of deserts areas with Central support. The comprehensive strategy based on the recommendations of the National Commission on Agriculture, which includes afforestation for stabilisation of sand dunes, providing shelter belts and meeting the requirements of timber and fuel wood, and grass land and pasture development to improve the livestock economy has been adopted. Water harvesting will be taken up on scientific lines with a view to support arable farming and tree cover. Ground water exploitation will be taken up only in such areas where ground water assessment has been made by proper hydrological surveys. Afforestation programme would also be encouraged along the sides of canals, minors and channels. Improvement of livestock, especially milch animals and sheep will be given a high priority. Production of fodders will be adjusted in the crop rotations in irrigation commands. Raising of fodder trees would also be encouraged. Some of the horticultural crops like oranges specially "Kinnau" would be introduced in the areas where irrigation becomes available. The cultivation of Jujoba (ber) and date palm which can grow successfully under moisture stress conditions would be introduced over large areas. Thus, the main thrust would be to replenish the natural resources and take up programmes which will check the deterioration of the desert areas besides restoration of the ecological balance. With this focus the economic programmes would be developed duly linked with the regenerated resources. All forms of exploitative use of natural resources which do harm to the ecology would be avoided.

9.216 A beginning has also been made for improving the economy of cold deserts by providing irrigation support and development of animal husbandry and horticultural crops. In view of limited knowldege available for devising a comprehensive strategy for the development of these areas, location specific research will be undertaken to determine the suitability of different measures. The programmes for both the hot and cold deserts are proposed to be intensified.

(5) *Women's Programme*

9.217 A good part of the agricultural work force consists of women. In the past their role and potential in agricultural and rural development had not been adequately assessed and appreciated. Since they perform a large number of chores connected with various types of agricultural and mixed farm activities, obviosuly they have to be involved in the development process more effectively. It would be essential to properly educate women for this purpose. If they are properly trained and made aware of the technological advances, the gain in terms of productivity and production as well as reduction of losses is expected to be substantial. The Applied Nutrition Programme was started so as to involve the women in producing locally suitable nutritive food including crops, foods of animal origin and fisheries. This nucleus organisation of ANP should be developed for self education with suitable help from the extension organisation. It should also be developed for ensuring better nutrition and nutritious diet for women and children in the rural community. Incidentally, such organisations could also be utilised for social welfare programmes for dissemination of knowledge in respect of health, sanitation, home-making and such other things. With these objectives, it would be necessary to remove all types of impediments which stand in the way of participation of women of all socio-economic groups as equal partners in the development process.

Area Development : Planning and Implementation

9.218 The Fifth Plan attempted different approaches to area development. These included the resource-based or problem-based development approach, the target-group approach, the incentive approach and the comprehensive area approach. The various area development programmes devised during the Fifth Plan may be classified as follows :

I Resource/Problem-based area programmes :	The Drought Prone Area Programme. The Command Area Development Programme. Hill Area Development.
II Target Group Programmes :	The SFDA Programmes; the Tribal Development Agency Projects.
III Area Specific Incentive Programmes :	Concessional Finance, Investment Subsidy and Transport Subsidy Schemes.
IV Comprehensive Area Develepmeni Programmes :	Sub-Plans for the Hill and Tribal Areas.

9.219 The fact that as many as 340 districts have been covered by one or more of these special programmes is an indication of the range of Central intervention in the sphere of area development. The Plan will be directed towards consolidating the gains of this development and substantially modifying the approach to one of integrated rural development with thrust towards full employment and productivity for small and marginal farmers and agricultural labourers.

9.220 The imperative laid down for the Plan for the rural areas of the country is increasing productivity through a strategy of growth for social justice and providing full employment to the rural sector within a ten-year time frame. Translating this objective into programmes in the field will require an extremely location-specific planning for the rural areas. Whilst in the past decentralised planning with public participation has been emphasised, it has never really been implemented in an orderly fashion. District level planning was postulated as far back as 1969. But the format for such planning and the guidance given were out of date when the new approach of growth with social justice was raised in 1970. With the new thrust of full employment, there is a further need for defining the decentralised planning approach in greater detail. Even though the programmes will have to be location-specific, because of the factor of economic and social linkages between rural settlements and considerations of viability in planning, it has been decided that a block which will possibly be reasonably homogene-

ous, will be taken as the primary area for local planning. At the same time, it is realised that the block level planning will have to be built in a frame of district level planning which has to be adjusted to the overall State Plan. The State Plan already forms a part of the national Plan.

(1) Block Level Planning

9.221 The block level planning will have to take note of the local resources, manpower, institutional strength and public participation for evolving a suitable programme of overall productivity with special emphasis on providing full employment to the rural population. Full employment will have to be related to the raising of the incomes of the target groups who are below the poverty line. The guidelines given earlier for integrated rural development will be fully kept in view in evolving suitable programmes based on past experience and performance. Programmes suited to local environment and local capacity will be given priority in aiming at the full employment goal. The block level plan will be substantially a plan for production-cum-employment. A base level socio-economic survey, scientific resource inventories and manpower budgeting would form the basis for planning at the block level. The necessary guidelines for this will be issued in modification of the present instructions for district level planning.

(2) District Level Planning

9.222 The district plan will have to be both a resource development as well as an infrastructure plan for supporting the production-cum-employment thrust of the block level planning. The infrastructure required for the various block level plans, the magnitude of the same and the locations of the institutional centres will be worked out for optimum support to the block level plans. The district plan will also take into consideration the institutional support available, input services and the marketing facilities that have to be developed.

(3) State Plan

9.223 The State Plan, while supporting and filling up the gaps required for district plans, will also have to take into consideration the overall State requirements and organise the inter-sectoral balance and regional investments. The full employment goal can be achieved only by suitable programmes of labour mobility, skill formation and organisational structures for mobilising and instructing labour. Neither a block plan nor a district plan will be able to comprehend all aspects of labour availability and make necessary balanced distribution. This can only be done at the State level and this should be an important aspect of State level planning.

(4) Machinery for Planning

9.224 The Planning Commission has been supporting a planning, evaluation and monitoring organisation at the State level for the last six years. In the instructions issued in 1969 it was contemplated that district level planning cells will also be similarly formed with suitable help and guidance from the Centre. Such district organisations have not yet been formed sufficiently/widely in the country. It is now necessary that the district level planning, evaluation and monitoring cells with the necessary expertise are developed immediately so that the detailed planning now contemplated can be efficiently executed. It is also necessary to create smaller cells at the block level, the block being the primary area for local planning. These cells should be manned by specialist personnel to land professional competence to local planning, monitoring and evaluation. Adequate financial support is proposed to be given to the States for these cells.

9.225 In the district level planning process, it is necessary to involve the elected institutions for development in the district, the financial institutions and public representatives with sufficient understanding of the local socio-economic milieu, so that the plans may be practical and suited to the local conditions. The block level planning will have to be evolved with the cooperation of the block authorities and the elected representatives at the block level, if any. The Plan will have to follow generally the format and guidance at the national level. The block level planning unit will have to take into consideration the productivity levels to be attained in the area and the employment levels to be reached in the guidelines generally given by the State and the district planning authorities for the same.

(5) Special Problem Areas

9.226 Whereas the guidelines for block level planning and district planning may be generally useful in areas with normal resources and normal socio-economic problems, there are areas in the country where a special approach is needed because of the backwardness of the area either on account of sociological, economic, historical or terrain and physical environment considerations. In the past, as stated earlier, special approaches have been developed with special funding arrangements for certain backward hill areas in the country and in areas where the tribal population predominate. Recently, a Desert Area Development Programme, both for hot and cold arid regions, has also been initiated.

9.227 In addition, it is found that there are certain other areas, cutting across block, district and even State boundaries which because of special socio-economic features and historical development have not been able to generate self-sustaining growth. Even though such areas may have potential for growth, without specific strategies and development support, their backwardness cannot be overcome. It is proposed to examine in depth such backward regions and to evolve with the consent of the State Governments suitable adaptations of the National Programme for greater impact in these regions.

(6) Planning for Integration of Rural-Urban Growth

9.228 Rural growth cannot be achieved in isolation from urban growth. A rural-urban balance is essential for a mutual healthy growth of both. In the absence of integrated planning of rural growth centres and the development of small and medium sized towns,

large metropolitan areas may develop excessive concentrations of population, with their attendant problems. Small and medium sized towns may, on the other hand, fail to develop into growth centres, supporting and stimulating the rural hinterland. In the rural areas, an essential part of area planning would be the development of rural growth centres. These would consist of centres provided with necessary economic infrastructure and services, whose locations would be determined by the criteria of maximum efficiency and accessibility. Growth centres, rural and urban, will have to be linked in a graded hierarchy. This will help overcoming the constraints to development in the rural areas, caused mainly by the scattered distribution of rural settlements and the diffused dispersal of rural services.

9.229 In the Fifth Plan, the National Programme of Minimum Needs was conceived of as a means of enabling the disadvantaged areas and sections of the population to achieve parity in the matter of basic items of social consumption. In this Plan, a Revised Minimum Needs Pragramme has been devised, for which a substantially larger outlay has been provided. The norms and the package of services of the new programme have been spelt out elsewhere in the Plan. It would be necessary in this context to relate these services to the programme of developing growth centres.

(7) Panchayati Raj

9.230 The involvement of the Panchayati Raj institutions in the development process has not been adequate in the past. It would be desirable to revitalise and involve these bodies as a suitable instrument for the realisation of the major goals of the Plan with popular participation. The entire question of revitalisation of Panchayati Raj bodies and their meaningful involvement in the programmes of rural development is being looked into by a special committee headed by Shri Asoka Mehta. The concrete policy proposals will be formulated after the Committee's recommedations become available.

Chapter 10

Energy

The energy crisis precipitated by the sharp increase in oil prices in 1973-74 brought to the fore the imperative need to formulate an energy policy framework within which the rate of growth and pattern of energy consumption could be regulated, the fossil fuel reserves of energy conserved and measures taken to develop replenishable sources of energy. The energy problem is rendered all the more difficult for a country like India since not only is the present level of energy consumption low, but a substantial proportion of energy supply is accounted for by the so called non-commercial sources such as firewood, cowdung and vegetable waste. While data on non-commercial energy consumption are scanty, a comparison of the findings of the Eighteenth and the Twentyeighth Rounds of National Sample Survey reveals that in the decade 1963-64 to 1973-74, the annual growth rate of non-commercial energy consumption was around 1 per cent only ; commercial energy consumption, on the other hand, grew at 5.6 per cent per annum. The total energy consumption is computed to have recorded an annual growth rate of 3.3 per cent but this was under 1 per cent in per capita terms. Over this ten-year period, the share of commercial energy in the total energy consumption went up from 45.3 to 56.5 per cent. Among the three sources of commercial energy, electricity registered the fastes growth. On account of fiscal and other measures taken by Government, the consumption of oil products remained almost stationary in the period immediately following the rise in oil prices in 1973, but has again shown a tendency to pick up since 1976. In terms of coal replacement, oil products provide even now, nearly half the commercial energy consumed in the country, the balance being shared almost equally by coal (excluding coal used for power generation) and electricity.

10.2. The demand for energy cannot, it is obvious, be allowed to grow in an unrestrained manner. The new industrial strategy of shift from capital intensive to employment-oriented technologies and decentralisation of production, wherever feasible, is designed to achieve, as one of its objectives, a restraint on further increase in the intensity of energy consumption in industry. While the overall objective will be to maintain a low energy profile, special endeavour will be made to ensure that the energy requirements of the agricultural sector are fully met.

10.3. Viewed from the angle of energy supply, coal will be the main source for the next few decades whether through direct use or thermal power generation. The performance of the coal industry in the recent past inspires confidence that it could meet the increasing energy demand arising in the coming years. With its versatility of application and ease of transport over long distances, the importance of electricity as a source of energy will increase further. As between electricity in its primary form generated from hydel and nuclear source and its secondary form generated from coal, it is the latter which will be predominant during the next five years. The long time required for the proper investigation of hydro projects and the even longer time taken for construction will inevitably mean a relatively slow growth of hydro generation. As for nuclear power, it is the consideratiton of costs which will primarily determine its pace of expansion. Having regard to its relatively higher capital requirements, creation of new nuclear power generation capacity will be restricted to locations where nuclear power is competitive with coal based power. Till such time as fast breeder reactors using our thoriun deposits become technically dependable and commercially viable and the problem of dealing with operational mishaps and disposal of spent fuel have been overcome, nuclear power is unlikely to play a major role in our power programme. Further rise in consumption of oil products will be kept within manageable limits through appropriate measures, such as substitution of oil by coal in industries for furnace and steam raising, gradual electrification of railway traction and replacement of diesel pump sets by electrical pump sets through an intensified programme of rural electrification.

10.4. Non-conventional sources of energy such as solar, wind, geothermal and tidal are still in the process of development and are not likely to be available for commercial exploitation in a major way in the immediate future. For a tropical country like India, however, utilisation of solar energy has to be accorded high priority, specially as it can meet energy requirements in villages for decentralised activities like agricultural pumping, crop drying and the like. Several research institutions have initiated major programme for solar energy utilisation in water heating, grain drying, food preservation, pumping, power generation, etc. with a view to achieving a coordinated approach, priority areas for R&D activities have been identified and a broad-based research programme has been formulated. The principal features of the solar energy R&D programme are creation of a solar radiation data base research and development of solar thermal systems for rural and urban applications and development of photo-voltaic cells and photo-voltaic systems for applications requiring a low level of power.

10.5. A national coordinated plan for utilisation of wind energy is proposed to be developed. For this purpose, a Task Force is being constituted, which would examine available wind data and assess wind mill designs suitable for Indian conditions. Greater emphasis will be placed on design and development of cost effective wind mills for pumping and power

generation. A project for the development of cold storage using geothermal energy has already been initiated at Manikaran in Himachal Pradesh. Other R&D projects for utilising geo-thermal energy will be explored, studies on tidal energy are being intiated, as also on chemical sources of energy for transport and other applications.

10.6. Even though no difficulty is anticipated in meeting commercial energy demand in the next five years, it is important from the long-term point of view that energy conservation receives due attention. Thus, import of coking coal will be resorted to in order to conserve the country's limited reserves of coking coal. Production of off-shore crude will be kept well below technically feasible levels so as to have larger reserves available underground in future years. Production of crude from the Ankleswar field, which is particularly suited for meeting the feedstock requirement of the detergent alkylate plant of IPCL at Baroda, will also be restricted in order to maximise the period of availability of this kind of crude. Among other measures for energy conservation, industries will be encouraged to go in for co-generation wherever possible, i.e. to extract energy in the form of electricity before using heat for process steam or similar purposes. Continued attention will have to be paid to improve the designs of various kinds of fuel burning equipment. Some success has been achieved in improving the efficiency of utilisation of petroleum products, but the scope for savings is much higher. Mechanisms and measures for achieving these are under consideration.

10.7. As mentioned earlier, non-commercial sources of energy still play a vital part on the Indian energy scene, specially in the rural areas. Given the rural economic situation and the fact that the bulk of domestic fuel is obtained at zero private cost, it would be unrealistic to assume that the importance of non-commercial energy will go down sharply within the foreseable future, not the least during the next five year period. Rather, far more concerted effort will be needed to improve supplies of firewood in the rural areas. As recommended by the National Commission on Agriculture, emphasis will be laid on introduction of social forestry schemes on a wide scale. The development of smokeless coal based fuels and widening of the market for soft coke and briquettes made from low cost middlings from washeries will be other measures to augment supplies of domestic fuel.

10.8. The development which holds out the greatest promise for meeting the energy needs of the rural areas in the immediate future is the utilisation of cowdung, night soil and agricultural waste in bio-gas plants. Work has been initiated in this field mainly by the Khadi and Village Industries Commission and installation of family owned bio-gas plants has made good progress in a number of States. The threat that such plants pose for the poorer sections of the rural community is fully recognised and community bio-gas plants which would allow equitable distribution of gas and by products are now being tried on a pilot scale. It is expected that within a short time, design improvements will not only raise the efficiency of gas generation but substantially bring down the capital cost of bio-gas units. In the next five years therefore, a large-scale programme for the setting up of bio-gas plants is visualised.

10.9. The last comprehensive review of energy issues was carried out by the Fuel Policy Committee in 1974. Having regard to the critical role of energy in economic development and the greater emphasis being given to integrated rural development and employment intensive technology, a Working Group on Energy Policy has been set up to estimate the prospective energy demand, to recommend measures for optimum use of available energy resources and to outline the national energy policy for the next 15 years.

10.10. The details of the programmes for power, coal and oil are set out in the following paragraphs.

Power

Review

10.11. Power development during the last three decades has been significant. The successive Plan with large outlays on power development, have added substantial generating capacity and a basic transmission and distribution system has been developed. The total installed generating capacity which was only 2300 MW in 1950 increased to over 24,000 MW in 1976-77.

Table 10.1 : Regionwise breakdown of installed capacity by the end of 1976-77

Region	Hydro	Thermal	Nuclear	Total
(1)	(2)	(3)	(4)	(5)
			(Figures in MW)	
I. Utilities				
Northern . . .	2699	2760	220	5679
Western . . .	1684	3645	420	5749
Southern . . .	3848	1877	..	5725
Eastern . . .	885	3508	..	4393
North-Eastern .	79	189	..	268
Total . . .	**9115**	**11979**	**640**	**21814**
II. Non-utilities . .				**2225**
III. All India . . .				**24039**

10.12. An adition of about 2000 MW is anticipated during 1977-78, which will take the total to about 26,000 MW at the commencement of the Five Year Plan, 1978—83.

10.13. Besides enlargement of generating capacity, the last three decades have witnessed the growth of power systems in the country from the rudimentary stage of isolated stations feeding local areas to the stage of fairly well-integrated systems in most of States and emergence of grids. In the five electricity regions of the country, Regional Electricity Boards have come into existence to promote integration of power systems at regional levels. Construction of inter State and inter-regional lines has also made headway. However, the

development of transmission and distribution systems has not kept pace with the expansion of generation facilities in some of the regions.

10.14. Rural electrification has been receiving considerable importance and has been pursued viogorously at both Central and State Levels. In the early stages, the emphasis was on village electrification. The serious drought in the country in the mid-sixties focussed attention on stabilisation of agriculture through exploitation of ground water resources and this led to a change in the emphasis of rural electrification from village electrification to energisation of pump sets. The creation of the Rural Electrification Corporation has helped to accelerate the spread of electricity in the rural areas in an organised manner. The progress of rural electrification during the various Plans is presented in the table below :—

Table 10.2 : Progress of Rural Electrification

Year	No. of villages electrified	No. of pumpsets energised
(1)	(2)	(3)
1950-51	3,061	21,000
1955-56	7,294	56,056
1960-61	21,750	1,98,904
1965-66	45,144	5,12,756
1968-69	73,732	10,88,804
1973-74	1,56,729	24,26,133
1974-75	1,72,169	26,11,982
1975-76	1,85,806	27,92,960
1976-77	2,02,869	30,41,305
1977-78 (Target) . . .	2,22,869	33,41,305

10.15. There have, however, been chronic power shortages for the last several years in many parts of the country, commissioning of new capacity has consistently fallen short of targets although it was considerably higher in the Fifth Plan than in the Fourth Plan. But for these slippages, aggravated by the sub-optimal performance of a considerable number of thermal sets, there would have been no power cuts in the country today. In the first three years of the Fifth Plan, the shortfall was as high as about 30 per cent in spite of the fact that the highest priority was accorded to the power sector in allocation of funds. Delays in equipment delivery by manufacturers, hold-ups in flow of funds from the State Governments to the Electricity Boards in some cases and limitations of the organisational capabilities of the Electricity Boards have all contributed to this situation. This has been aggravated by teething troubles in commissioning newly installed thermal generating units. These are areas of concern which call for urgent remedial action.

Plan 1978—83

10.16. The All India consumption of electricity in 1982-83 is estimated at 128.8 billion units requiring a generation of 167 billion units (compared with generation of a little under 100 billion units anticipated in 1977-78). This will call for an addition of about 18,500 MW of generating capacity, in the next five years for all of which projects have already been cleared or funds provided for starts in 1978-79. In making this estimate, credit has been taken for substantial improvements in the performance of power generating agencies in completing projects on schedule and better operation of thermal stations, as well as system improvements and reduction in power losses through better maintenance and operation of transmission and distribution systems. Ideally, the scenario for power development should provide for maximisation of hydroelectric power generation, since this is a replenishable form of energy. But the bulk of the untapped potential is in the geologically difficult and relatively inaccessible areas of the North and the North East and construction of hydro projects takes a long time. Although funds have been provided in the plan for the on-going and a few new hydro-schemes, coal based thermal stations will account for the bulk of addition to capacity in the Plan period. The programme of thermal power development will be based predominantly on power stations located close to the pitheads, supplemented to the extent necessary by load centre based power stations.

10.17 The generation requirements in 1987-88 is estimated at 265 billion units which would call for an addition of between 20,000 and 25,000 MW of capacity in the five year period 1983—88. Long gestation schemes which have already been sanctioned or are in the process of sanction will contribute around 10,000 M.W. For the rest, advance action will be initiated in the next five year period to synchronise with the build-up of power demand. The rate of growth in the demand for power, the capital intensity of power systems and the technological options in regard to both generation and transmission are now such that it has become increasingly necessary to get away from the present practice of looking at States and even regions in isolation for developing power systems. It is therefore proposed to develop over the next year or two a systems approach to national power planning in a 15-year time frame so that optimal solutions are found and the power system developed accordingly. If this approach is to be implemented, the constraints on power planning imposed by the size of the States plans, a reference to which is made later, have to be removed.

10.18. The momentum built up in nuclear power generation will be maintained. Besides completion of the Madras Atomic Power Station and commissioning of the first unit at Narora, a start will be made on one more nuclear power station. The total installed capacity of nuclear plants which would be in operation by 1982-83 would be 1565 MW. This will fit in with the tempo required for building up sufficient inventory of plutonium for induction of fast breeder technology in the last decade of the century.

10.19. While adequate generating capacity is expected to be developed by the terminal year of the Plan subject to the improvements in the performance of power generating and distributing agencies, there would be power shortages in the intervening years in some parts of the country. Interim measures to alleviate such shortages are under consideration. In the

meantime, the pattern of restrictions on power consumption by different categories of consumers in situations of unavoidable power shortage will be reviewed in consultation with the State Governments.

10.20. While the policy of discouraging installation of captive generating capacity will continue, exceptions will be allowed where such units fit into a 'total energy' system, in selected cases of chemical and metallurgical industries which have expensive equipment sensitive to power system fluctuations.

10.21 Integrated operation of power systems in the various regions has already been accepted as an essential requirement for optimum utilisation of resources and maximum operational efficiency. Some progress has been achieved in this direction particularly in the Southern region. Progress, however, has been slow in other regions due to the complex nature of the technical and commercial problems involved. The effort in the next five years would be to reinforce the transmission systems adequately, evolve a 400 KV-net-work throughout the country, establish a national load despatch centre and move towards the evaluation of a national grid.

10.22. As power development is becoming increasingly capital intensive, construction of massive hydroelectric projects and large pithead thermal stations, which benefit more than one State, often calls for investments beyond the financial resources of any single State. For this reason, the Central Government entered the field of power generation sometime ago and took up construction of a few hydel and thermal projects, apart from atomic power stations. With the launching of the programme of super thermal stations, Central role in power generation has enlarged significantly. Apart from two such stations taken up in the Fifth Plan, work will commence on three other stations in the next five years. Two or three other major hydro electric schemes which will be of regional benefit may also be taken up. Central generation, which will account for about 7 per cent of the total installed capacity by March, 1978 will increase to about 10 per cent by March, 1983.

10.23. Concerted attention will be given to the improvement of utilisation of thermal capacity and reduction of losses in transmission and distribution. Setting up of inter-disciplinary task forces to identify cases of sub-optimal performances of thermal units and suggest time bound action programmes, reduction in down-time for maintenance of units, enlargement of training facilities for power station operating personnel and specific allocation of funds for system improvement will be steps in this direction.

10.24. Electrification of rural areas will be intensified. Twenty lakh pump sets will be energised and one lakh villages electrified during the period 1978-83, as against 9 lakh pump sets and 80,000 villages in the four year period 1974-78. This will include a coverage of about 40,000 villages under the Revised Minimum Needs Programme. In order to attract a larger flow of institutional funds for this programme, specially in the States having much untapped ground water potential, a new scheme of joint financing by Rural Electrification Corporation, Agriculture Finance and Development Corporation and commercial banks will be introduced. New schemes will also be introduced for intensive energisation of pump sets in already electrified areas and for extension of electric supply to small-scale and tiny industries.

10.25. The implementation of the large power programme projected for the next five years will pose formidable organisational manufacturing and coordination problems. The major responsibility will continue to fall on the State Electricity Boards. Measures will therefore be taken in consultation with the State Governments, to streamline the management of State Electricity Boards to make them more functionally oriented and to induct a greater measure of relevant professional expertise. Steps will also be taken to promote within the staff of the Boards specialisation in generation-thermal and hydro, transmission and distribution, commercial operations, load despatch etc. Two Committees have already been set up to examine ways to reduce construction time and the possibility of adoption of modern construction techniques in the implementation of thermal and hydro electric projects. The scope for adopting larger sizes of thermal generation units in the various systems, in order to accelerate the tempo of power development, is being examined. The power programme in the Plan includes the commissioning of the first 500 MW unit at the Trombay Thermal Station in Maharashtra.

10.26. It is vital that the finances of State Electricity Boards which are responsible for power generation and distribution on an ever increasing scale, are in sound order and that they are able to generate some internal resources for future power development. In order to review the existing norms of financial performance of the Boards, a High Level Committee of experts is being set up to make recommendations for rationalising the tariff structure and improving the working of the Boards.

10.27. Besides the challenge it poses to the organisational and constructional capabilities of Electricity Boards, the massive power programme calls for a rethinking on the manner of funding the power sector, specially the generation schemes. Under the present system, funds for the power programme, the bulk of which is in the State Sector, have to be found from the pool of resources available for the States' Annual Plans. In spite of the priority to be accorded to the power sector in allocation of funds when drawing up the Annual Plans, it is expected that it will become increasingly difficult for States to make the necessary allocations to individual projects on account of constraint of resources. As a consequence of the mismatch between requirements and availability of funds, project implementation will suffer further and completion schedule will slip. Delays in construction result in cost escalations which affect the financial projections made at the time of investment decisions. With the increase in the size of generating units, humps in investment from year to year are also getting more pronounced than before. The feasibility of segregating funds for power generation schemes from the general flow of Plan funds in such a way that they can be released according to requirements of individual projects, by creating a new national level financial

institution if necessary will be examined. Such a measure would also result in stricter appraisal procedures, closer monitoring of project implementation and a greater degree of cost consciousness and attention to financial returns by the loan receiving agencies.

10.28. The physical targets and financial outlays under the various categories are set out in the table below :

Table 10.3 : Installed Generating capacity expected to be created by 1982-83

Region	Hydro	Thermal	Nuclear	Total
(1)	(2)	(3)	(4)	(5)
			(Figures in MW)	
Utilities				
Northern	4663	6125	675	11463
Western	2069	9435	420	11924
Southern	6328	3667	470	10465
Eastern	1199	6218	..	7417
North-Eastern	396	436	..	832
TOTAL UTILITIES	**14655**	**25881**	**1565**	**42101**
NON-UTILITIES				**2525**
ALL-INDIA				**44626**

Outlay

	(Rs. crores)
Generation	8750*
Transmission and Distribution	5300
Rural Electrification	1450**
Survey and investigations	230
S & T	20
TOTAL	**15750**

*Excludes investment in non-utilities.

**Excludes Rs. 300 crores from financial institutions.

10.29. Capacity additions planned during the period 1978—83 from the projects which are under implementation or for starting which funds have already been sanctioned are shown in Annexure I.

Coal

Review

10.30. Coal mining was mostly being carried out on an unscientific and irrational basis before the take over of the coal industry by Government. The primary consideration was profit-making and sound principles of development were sacrificed. This resulted in large reserves of coal being looked up in pillars and underground coal fires continuing for decades. Townships and infrastructural facilities were developed over coal bearing areas which either completely blocked or seriously reduced the extractable reserves. There was wastage of good quality coking coals as they were being used where the plentifully available low grade coals could have been substituted.

10.31. The first corrective step in this direction was the formation of National Coal Development Corporation in the public sector in 1956. This grew ultimately to become the Coal India Limited which now mines about 88 per cent of India's coal. It has developed a full fledged mine planning and design organisation which prepares programmes of exploration and mining, keeping in mind the conservatory aspects. The take over of the coal mines also led to many of the miners getting reasonable wages for the first time and a steady improvement in their welfare measures. On the other hand, it led to surplus workers being retained on the rolls. Despite the fact of an improvement in the productivity of mines, there has been a sharp increase in production costs due to the combination of wage increases and surplus labour steps to reduce the production cost have, therefore, to be seriously examined.

10.32. After the sharp increase in oil prices, it was recognised that the prime source of energy to be produced in the organised sector would have to be coal at least till the turn of the century. Steps were taken to reduce the consumption of petroleum based fuel and the coal industry geared up to meet the consequent sharp increase in demand. Reorganisation of old mines, introduction of new methods and techniques in the development of new mines and standardisation of plant and equipment have contributed to a rapid growth in coal production. Production of coal has gone up from 35 million tonnes in 1951 to around 103 million tonnes in 1977-78. The build-up of production is presented in the table below :

Table 10.4 : Coal Production

Plan period	Target	Achievement
(1)	(2)	(3)
	(in Million Tonnes)	
1951	..	34.98
1955-56 (First Plan)	39.00	38.23
1960-61 (Second Plan)	60.00	55.72
1965-66 (Third Plan)	97.32	67.74
1973-74 (Fourth Plan)	93.50	78.17
1974-75 (Fifth Plan)	90.00	88.41
1975-76 (Fifth Plan)	98.00	99.63
1976-77 (Fifth Plan)	108.00	101.27

10.33. The pattern of coal consumption has also undergone a significant change during the past two decades. Till the beginning of the Second Plan, Railways were the single largest consumers accounting for more than one-third of the total coal consumption. With increasing dieselisation and electrification, the consumption of coal by Railways has been declining steadily. On the other hand, the demand for coal by the steel industry and for power generation has increased sharply, other major consumers being fertilizers, textiles, cement and paper and brick manufacture industries.

10.34. In the Fifth Five Year Plan, the requirements of coal were expected to reach 124 million tonnes. While the production of coal in the first two years of the Plan exceeded the annual targets, the

overall demand for coal turned sluggish during the middle of the Fifth Plan period, as a result of which pithead stocks accumulated to the extent of 14.6 million tonnes by the end of 1976-77. The coal production received a set back in 1977-78 for a variety of reasons such as interruption in power supply and labour unrest. The demand, however, registered a spurt, which could be met by depletion of stocks to the extent of 3.6 million tonnes. This emphasises the need for a sound stock piling policy both at pitheads and with consumers.

Plan 1978-83

10.35. India's reserves of usable coking coal are limited; it is, therefore, desirable to embark on a planned programme of conservation by importing low ash coking coal in significant quantities. The use of superior quality coking coals is expected to improve the quality of the coke fed to the blast furnaces and increase their productivity. Besides, if the imported coals are found to form good blends for blast furnaces in combination with significant proportions of such indigenous coals as otherwise would not have been considered usable in any appreciable quantities, the reserves of usable coking coals could become larger. In 1978-79, about 1 million tonnes of coal from various sources will be imported to determine the optimal sources and blending practices. If this experiment succeeds, it may be possible to consider larger imports later on. Simultaneously, alternative routes to reducing the demand for coking coal are being pursued—use of formed coke, injecting coal dust into blast furnaces, manufacture of sponge iron, etc.

10.36. By the end of the Five Year Plan 1982-83, the demand for coal is expected to be 150.5 million tonnes, the requirements of major consuming sectors being as follows :

Table 10. 5 : Coal Consumption in major Sectors

Sl. No.	Consumer	Requirement in 1982-83
(0)	(1)	(2)
		(In million tonnes)
1.	Steel	34.00
2.	Power	54.00
3.	Railways	11.80
4.	Fertilisers	4.70
5.	Soft Coke and LTC	6.50
6.	Cement	7.20
7.	Others	32.30
8.	TOTAL	150.50

Of this, a demand equivalent to 1.5 million tonnes of indigenous coal may be met by import of 1 million tonnes of superior quality coking coal. Indigenous production will meet the balance demand of 149 million tonnes of coal, of which about 5 million tonnes will be met from the captive mines of TISCO and IISCO, while the balance of 144 million tonnes will be contributed by the mines in the public sector (129 m.t. from Coal India Ltd., and 15 m.t. from Singareni Company). The production in the public sector will comprise 115 million tonnes from mines already in production or under construction and 29 million tonnes from different categories of mines to be approved in the next few years.

10.37. In order to achieve a 46 million tonne increase in domestic production over the five year period, a multipronged strategy is being followed. Besides utilising fully the capacity of the existing mines and the mines under construction, priority will be given in the choice of new mines to projects which have a relatively short gestation period. Thus, new open-cast mines are expected to contribute about 50 per cent of the additional production.

10.38. The Five Year Plan 1978-83 lays considerable emphasis on the rationalisation of production, distribution, utilisation and marketing of coal. While measures would be adopted to mine coal with high overburden ratios in open-cast mines, simple mechanisation of board and pillar system of mining which contributes nearly 70 percent of the total production, along with the introduction of long-wall method of mining are envisaged in underground mining. These measures would facilitate improved working conditions, raise safety standards, reduce human drudgery and lead to better conservation of coal and improve productivity.

10.39 A long term plan is being drawn up for the reorganisation of the Jharia Coalfield and the control of open fires with a view to augment the availability of coking coal reserves. Provision has been made in the Plan for substantial augmentation of washery capacity to ensure supply of consistent quality of washed coals to the beneficiation of selected non-coking coals. The Plan provides for advance action specially on long gestation projects for coal production commensurate with projections of coal demand beyond 1983. In the area of distribution, optional choices available would be studied and the pattern of linkages would be designed as to minimise movement of coal and rationalise utilisation.

10.40. The emphasis on the replacement of petroleum based feed stock by coal in boilers will continue. A programme has been drawn up to produce and popularise the use, specially in rural areas, of substitutes for wood and kerosene such as briquettes from coal middlings, soft coke etc. The present wasteful methods of producing coke through open stacks and beehive works as a result of which valuable bye-products are lost will be replaced progressively by modern plants equipped with bye-product recovery units. The Plan thus envisages the setting up of capacities for low temperature carbonisation of coals, pelletisation of inferior quality of coking coals and conversion of washery middlings to cheap domestic fuel.

10.41. The Plan provides for substantial augmentation in the exploration for coal. Adequate provision has also been made for improving welfare amenities and strengthening infrastructural facilities.

10.42. A provision of Rs. 18 crores has been made in the Plan for research and development which includes Rs. 3 crores for CFRI and Rs. 15 crores for Coal India.

Lignite

10.43. The production of lignite which has touched 3.7 million tonnes in 1977-78, is expected to increase to 6.5 million tonnes from the existing mines by 1980-81. In addition, a second mine with a capacity of 4.7 million tonnes to meet the requirements of a new thermal power station at Neyveli will be developed. The total production of lignite at the end of the Plan period is expected to be 8.8 million tonnes.

10.44. For the various programmes of development in the coal and lignite sectors, a provision of Rs. 1850 crores has been made in the Plan, the details of which are set out in Annexure II.

Petroleum

Review

10.45. The great fillip to industrial development since independence led to increasing demands for petroleum products. To reduce the dependence on imports, it was felt necessary to intensify efforts to establish indigenous oil resources, although surveys and exploration done by the foreign oil companies left little room for optimism. The Oil and Natural Gas Commission and Oil India were formed in 1956 and 1959 respectively, the former to carry out a nation-wide search for oil and the latter to conduct intensive exploration in the Upper Assam Valley. As a result of the efforts of these two organisations, oil production which stood at a meagre 0.51 million tonnes in 1961 increased to about 5.6 million tonnes by the end of the Third Plan, 7.9 million tonnes by the end of the Fourth Plan and to 10.8 million tonnes in 1977-78. In the Fifth Plan period, the off-shore exploration of ONGC met with success with the discovery of the large Bombay High structure. Besides, a gas field of substantial size has been found at South Bassein in the same area. Exploration for other structures around Bombay High has also met with encouraging results as a consequence of which off-shore oil is increasingly contributing to indigenous oil production.

10.46. At the beginning of the Fourth Plan, the total refining capacity stood at 16.25 million tonnes per year in terms of crude throughput with eight refineries in operation. During the Fourth Plan period, the Madras Refinery was completed and together with some improvements and expansion in other refineries, the capacity was enhanced to 24 million tonnes. Under the Fifth Plan, a new refinery was added at Haldia and some marginal expansion effected at Barauni and Koyali, taking the refining capacity to 27.5 million tonnes per annum by 1977-78.

10.47. Consumption of petroleum products which was 5.22 million tonnes in 1956, registered a more than four-fold increase by 1973 when it touched 23.72 million tonnes. The increase in the international petroleum prices and measures which Government took thereafter to contain the level of consumption resulted in its being static at around 23 million tonnes upto 1976. However, during the year 1976-77, an upward trend again became visible.

Plan 1978-83

10.48. It is estimated that the consumption of petroleum products will reach a level of about 36 million tonnes in 1982-83. The demand projections for the period 1978-83 are given below :

Table 10.6 : Demand Projections of Petroleum Products

Year	Quantity of Product
(1)	(2)
	(in Million tonnes)
1976-77 (Actual)	24.07
1977-78 (Anticipated)	25.64
1978-79	28.01
1979-80	30.15
1980-81	32.47
1981-82	34.36
1982-83	36.32

10.49. In the next five years, exploration for oil will be intensified; this is necessary not only to ensure an adequate reserve-to-production ratio to sustain the present level of production, but also to be able to meet the country's increasing demand for petroleum in the coming critical decades when international oil supplies may start tapering off or prove prohibitively expensive.

10.50. On-shore, the exploration strategy of ONGC is to continue its efforts in both its Eastern and Western regions, where indicated reserves are high. In the Eastern sector, i.e. Assam-Arakan basin, there is a good chance of finding substantial reserves from sizeable and discernible structures. In the Western Sector on the other hand, where considerable exploration has already been carried out, the effort will be directed to detect subtle traps and to less intensively explored portions of the Cambay basin. A relatively cautious approach will be adopted in other regions as these are ill-explored or virgin and the risk-to-reward ratio is high. Oil India will likewise carry out exploration for establishing more reserves in their mining lease areas around Jorajan-Kathalguri and Santhi-Jaipur and also in Arunachal Pradesh.

10.51. The approach in off-shore exploration is to carry out detailed seismic surveys and exploratory drilling of all the off-shore regions including the Andaman & Nicobar Islands. According to prognostic studies, about two-thirds of the country's oil reserves are located in the sedimentary basins off-shore. The bulk of these reserves is yet to be explored and proved. More intensive work, therefore, needs to be done in these areas to assess properly the country's oil potential. While most of the exploration will be done by the ONGC, some areas may be leased to other agencies. Thus, Oil India will carry out exploration in the Mahanadi delta. By the end of the Plan, it will be possible to arrive at dependable estimates of the country's off-shore reserves.

10.52. While production of on-shore crude by ONGC and Oil India will be maintained at a level of around 9 million tonnes per year, ONGC proposes to further develop its oilfields in Bombay High and Bassein structures to develop a production capability which can peak 12.5 million tonnes per year. However, in order to conserve oil resources, it may be necessary to restrict production from these fields to around 9 million tonnes per year.

10.53. Oil and gas from Bombay High and Bassein Oilfields will be pumped through submarine pipeline to Uran on the mainland where facilities for crude stabilisation gas fractionation, pipelines to local refineries and to Butcher Island for shipment to other refineries are being established. Studies for transport of free and associated gas northward to Gujarat are also under way.

10.54. In view of the rapid growth of the oil industry in the country, indigenous manufacture of on-shore drilling rigs has already been developed in Bharat Heavy Electricals Ltd. Development of facilities for building fixed platforms and other structures for off-shore oil production has also been taken up at Mazagaon Docks.

10.55. With the commissioning of the new refineries of Bongaigaon (1 million tonnes) and Mathura (6 million tonnes) and the completion of the expansion project at Gujarat Refinery, the total refining capacity in the country is expected to reach 37.45 million tonnes by 1980-81. Work on the Salaya-Koyali-Mathura pipeline to transport crude oil received by ship at Salaya to the Gujarat and Mathura refineries will be completed to synchronise with the commissioning of new refining capacity. In pursuance of the policy to convert the heavy ends wherever possible into middle distillates through secondary processing, the installation of a fluid catalytic cracker at Gujarat refinery is already under implementation. With the full utilisation of the refining capacity and with some increase in the imports of petroleum products, it should be possible to meet the demand for petroleum products upto the last year of the Plan. Having regard, however, to the need to have adequate refining capacity and secondary processing facilities, and the gestation period for creating these facilities, some funds have been provided for expenditure during the Plan period.

10.56. With the take-over of all the major oil distributing companies—ESSO in 1974 and Burmah-Shell and Caltex in 1976, almost the entire marketing operations of the oil industry have come under the Public sector. The effort will, therefore, be to achieve integration of distribution facilities available with the oil distributing companies with a view to deriving the maximum benefits of the combined operations of all the companies. A large scale expansion is proposed in the supply and distribution of LPG which is a highly popular substitute for kerosene, arising mainly from fractionation of gas from Bombay High and commissioning of Mathura Refinery and Koyali fluid catalytic cracker.

10.57. The manner of optimal utilisation of gas from Bombay High region and in Assam is under examination. Studies indicate that the most economic use of gas would be as feedstock for the manufacture of fertilisers after extraction of the LPG fraction. The next highest priority attaches to its use as a feedstock for petro-chemicals for which purpose it is also more economical than Naphtha. Use of gas as a fuel for power generation would generally rank the lowest in terms of national priorities and choices. However, there may be isolated pockets of gas where the problems of puting up facilities for using gas as fertiliser or petro-chemical feedstock are so formidable that power generation may be the only option. Keeping this in view, programmes have been drawn up for setting up large-size gas based fertiliser plants on the West Coast. The expansion of the fertiliser plant at Namrup based on gas available in Assam is also under examination.

10.58. Research and development in the petroleum sector will be strengthened with the establishment of the Institute of Reservoir Studies at Ahmedabad and the Institute of Drilling Technology at Dehradun. The former will carry out studies on reservoir engineering and management and on methods of enhancing recovery from oilfields. The Institute of Drilling Technology will specially be concerned with problems of drilling of deep wells. These two new institutions will complement the work of the Institute of Petroleum Exploration, which has already been established. The research centre of IOC at Faridabad will also be completed in the Plan period : this centre will be mainly concerned with product development.

10.59. The summary of the financial outlay for the petroleum sector is given at Annexure III.

ANNEXURE I

Benefits from Generation Schemes during 1978—83

Sl. No.	Region/Scheme	Benefits 1978-83 (MW)
(0)	(1)	(2)
	Northern Region	
	Continuing Schemes	**4337**
1.	Beas H. E. Scheme Unit I (Punjab, Haryana & Rajasthan)	330
2.	Beas H.E. Scheme Unit II (Pong) (Punjab, Haryana & Rajasthan)	180
3.	Beas H.E. Scheme I Unit II (Pong) Extn. (Punjab, Haryana and Rajasthan)	60
4.	Panipat Thermal Station (Haryana)	220
5.	Faridabad Thermal Station Extn. Unit III (Haryana)	60
6.	Gurunanak Thermal Station Extn. Units III & IV (Punjab)	220
7.	Shanon H.E. Scheme Extension (Punjab)	50
8.	Lower Jhelum H.E. Scheme Units II & III (Jammu & Kashmir)	70
9.	Giri Bata H.E. Scheme Unit II (Himachal Pradesh)	30
10.	Bassi H.E. Scheme Augmentation (Hmachal Pradesh)	15
11.	Binwa H.E. Scheme (Himachal Pradesh)	6
12.	Rongtong H.E. Scheme (Himachal Pradesh)	2
13.	Kota Thermal Station (Rajasthan)	220
14.	Mahibajaj Sagar H.E. Station (Rajasthan)	25
15.	Obra Thermal Station Extn. II & III (Uttar Pradesh)	800
16.	Paricha Thermal Station (Uttar Pradesh)	220
17.	Garhwal Rishikesh H.E. Scheme (Uttar Pradesh)	144
18.	Khodri H.E. Scheme (Uttar Pradesh)	120
19.	Maneribhali H.E. Scheme (Uttar Pradesh)	90
20.	Badarpur Thermal Station Unit V (Central)	210
21.	Baira-Suil H.E. Scheme (Central)	180
22.	Singrauli Super Thermal Station (Central)	630
23.	Rajasthan Atomic Power Project Unit II (Central)	220
24.	Narora Atomic Power Station (Central)	235
	New Schemes	**428**
25.	Panipat Thermal Station Extension I (Haryana)	220
26.	New Hydel Schemes (Punjab)	203
27.	Andhra H.E. Scheme (Himachal Pradesh)	5
	Western Region	
	Continuing Schemes	**4445**
28.	Ahmedabad Thermal Station (Gujarat)	110
29.	Ukai Thermal Station Extension Unit V (Gujarat)	210
30.	Wanakbori Thermal Station (Gujarat)	630
31.	Ukai Left Bank Canal H.E. Power House (Gujarat)	5
32.	Amarkantak Thermal Station Extension (Madhya Pradesh) Unit II	120
33.	Satpura Thermal Station Extn., I (Madhya Pradesh)	400
34.	Korba East Thermal Station Extension (Madhya Pradesh)	120

(0) (1)	(2)
35. Korba West Thermal Station (Madhya Pradesh)	420
36. Pench H.E. Scheme (Madhya Pradesh & Maharashtra)	160
37. Koyna H.E. Scheme Unit IV (Maharashtra)	80
38. Koradi Thermal Station Stage III (Maharashtra)	620
39. Nasik Thermal Station Extn. I (Maharashtra)	210
40. Nasik Thermal Station Extn. II (Maharashtra)	420
41. Bhusawal Thermal Station Extn. (Maharashtra)	210
42. Parli Thermal Station Extn. (Maharashtra)	210
43. Chandrapur Thermal Station (Maharashtra)	420
44. Koyna Dam P.H.H.E. Station (Maharashtra)	40
45. Tillari H.E. Scheme (Maharashtra)	60
New Schemes	**1410**
46. Satpura Thermal Station Extn. II (Madhya Pradesh)	420
47. Bhira Tail Race H.E. Scheme (Maharashtra)	40
48. Gas Turbine Plant (Maharashtra)	240
49. Trombay Thermal Station (Maharashtra)	500
50. Korba Super Thermal Station (Central)	210
Southern Region	
Continuing Schemes	**3630**
51. Vijaywada Thermal Station (Andhra Pradesh)	420
52. Nagarjunasagar Right Canal H.E. Scheme (Andhra Pradesh)	40
53. Nagarjunasagar Pumped Storage Scheme (Andhra Pradesh)	400
54. Donkarayi Canal H.E. Scheme (Andhra Pradesh)	25
55. Balimela Dam H.E. Power House (Andhra Pradesh)	60
56. Srisailam H.E. Project (Andhra Pradesh)	440
57. Kalinadi H.E. Scheme (Karnataka)	910
58. Linganmakki H.E. Scheme (Karnataka)	55
59. Idamalayar H.E. Scheme (Kerala)	75
60. Kundah H.E. Scheme Stage IV (Tamil Nadu)	50
61. Suruliar H.E. Scheme (Tamil Nadu)	35
62. Tuticorin Thermal Station (Tamil Nadu)	420
63. Tuticorin Thermal Station Extenion (Tamil Nadu)	210
64. Kalpakkam Atomic Power Project (Central)	470
New Scheme	**630**
65. New Thermal Station (Karnataka)	210
66. Neyveli Super Thermal Station (Central)	210
67. Ramagundam Super Thermal Station (Central)	210
Eastern Region	
Continuing Schemes	**2624**
68. Subernarekha H.E. Scheme Unit II (Bihar)	65
69. Pathratu Thermal Station Extension IV (Bihar)	220
70. Barauni Thermal Station Extension Units VI & VII (Bihar)	220
71. Santaldih Thermal Station Unit III & IV (West Bengal)	240
72. Jaldhaka H.E. Scheme Stage II (West Bengal)	8
73. Kurseong H.E. Scheme (West Bengal)	2
74. Bandel Thermal Station Extension (West Bengal)	210
75. Kolaghat Thermal Station (West Bengal)	630
76. Ramam H.E. Scheme (West Bengal)	37
77. Durgapur Projects Ltd., Thermal Station (West Bengal)	110
78. Chandrapur Thermal Station Unit VI (D.V.C.)	120
79. Durgapur Thermal Station Extension I (DVC)	200

(0)	(1)	(2)
80. Panchest Hill H.E. Pumped Storage Scheme (DVC)		40
81. Bokaro "B" Thermal Station Extension I (DVC)		210
82. Talcher Thermal Station Extension (Orissa)		220
83. Upper Kolab H.E. Scheme (Orissa)		80
84. Lower Lagyap C.H.E. Scheme (Sikkim)		12
New Schemes		**220**
85. New Thermal Station (Bihar)		220
North Eastern Region		
Continuing Schemes		502
86. Bongaigaon Thermal Station (Assam)		120
87. Lakwa Gas Turbine Project (Assam)		45
88. Waste Heat Recovery Plant at Namrup (Assam)		22
89. Kyrdem Kulai H.E. Scheme (Meghalaya)		60
90. Kopili H.E. Scheme (North East Council)		150
91. Loktak H.E. Scheme (Central)		105
New Scheme		**61**
92. Bongaigaon Thermal Station Extension I (Assam)		60
93. Dikchu Hydel Scheme (Nagaland)		1
Total Continuing Schemes		15538
Total New Schemes		2749
Total Continuing and New (Utilities)		18287
Non Utilities		300
GRAND TOTAL		18587

ANNEXURE II

Outlay on Coal and Lignite

Sl No.	Scheme	Plan Outlay 1978—83
(0)	(1)	(2)
		(Rs. crores)
A. Coal India Ltd.		
1.	Continuing schemes and existing mines	310
2.	Sanctioned reconstructione/new mines	240
3.	Reconstruction mines yet to be sanctioned	250
4.	New Mines to be sanctioned	357
5.	TOTAL INVESTMENT ON MINES	**1157**
6.	Infrastructure (Road, railway sidings, coal handling plants, sand gathering, workshops, telecommunication and water supply)	102
7.	Washeries	110
8.	Exploration and CMPDI	55
9.	Coal utilisation	47
10.	Others (Development of new mining methods, mining education and training, Damodar river diversion, safety, Jharia fires)	37
	TOTAL COAL INDIA LTD.	**1544**
B. Singareni Collieries Ltd.		
11.	Investment on mines	84
12.	Coal Utilisation and others	22
13.	Exploration	5
	TOTAL B	**111**
	TOTAL COAL (A+B)	**1655**
C. Lignite		
14.	Nevyeli Lignite Corporation	135
	GRAND TOTAL	**1850**

This includes Rs. 545 crores towards development of various coking coal projects.

ANNEXURE III

Outlay of Petroleum Sector (1978—83)

Organisation Programmes/Projects	Outlay
(1)	(2)
	(Rs. Crores)
Oil & Natural Gas Commission	
On-shore	600.00
Off-shore	1200.00
	1800.00
Oil India Ltd.	
Exploration	43.00
Equipment and Facilities	90.00
	133.00
Indian Oil Corporation Ltd.	
Mathura Refinery Project	131.88
Gujarat Refinery Expansion Project	14.00
Secondary Processing Facilities FCC at Koyali	36.11
Salaya-Viramgam-Mathura Pipeline	151.74
R&D Centre, Faridabad	2.63
Mathura-Delhi-Ambala-Jullundur Pipeline	10.00
L.P.G. Marketing Facilities	40.00*
Other Marketing Facilities	16.00
Other Schemes	2.30
	404.66
Bongaigaon Refinery & Petro-Chemicals Ltd.	20.00
Bharat Petroleum Corporation Ltd.	
Facilities for marketing LPG from Bombay High Associated Gas	17.50*
Solvent extraction of aromatics from Bombay High Crude	22.27
Other Schemes	8.29
	48.06
Hindustan Petroleum Corporation Ltd.	
Facilities for marketing LPG from Bombay High Associated Gas	17.50*
Lube Refinery (Expansion)	13.20
Other Schemes	8.10
	38.80

1	2
Caltex Oil Refining (India) Ltd.	
Facilities for marketing LPG from Bombay High Associated Gas	5.00*
Other Schemes	4.61
TOTAL	**9.61**
Cochin Refineries Ltd.	1.55
Madras Refineries Ltd.	
Paraffin Wax Plant	4.54
Other Schemes	2.23
TOTAL	**6.77**
Engineers India Ltd.	2.45
Lubrizol India Ltd.	1.10
Miscellaneous	
Strategic Crude Storage Tanks	8.00
Additional Refining Capacity/Secondary Processing Capacity	40.00
Additional Marketing Facilities	16.00
Research & Development Schemes	20.00
GRAND TOTAL	**2550.00**

*These outlays are net of the deposits that will be obtained from potential customers of LPG.

Chapter 11

Village and Small Industries

The village and small industries sector consists broadly of (i) traditional cottage and household industries (viz., handloom, khadi & village industries, handicrafts, sericulture and coir industry), and (ii) modern small scale industries (defined as those having investment of upto Rs. 10 lakhs in plant and machinery and Rs. 15 lakhs in the case of ancillary industries). As distinguished from modern small scale industries, the traditional cottage and household industries are located mostly in rural and semi-urban areas. A large number of these traditional industries do not use power-operated appliances and equipment. These also involve relatively lower levels of investment and technology and provide largely part-time employment. A very large number of the persons dependent on traditional industries belong to the poorer sections of the society and live below the poverty line. However, a number of these industries produce certain essential articles required by the masses and also some other items which are exported. The number of persons employed in the principal traditional industries is estimated at 140 lakhs, including about 57 lakhs in the handloom industry and about 36 lakhs in sericulture. Much of this employment is neither full-time nor well-remunerative. Modern small scale industries are estimated to provide full-time employment to about 28 lakh persons.

Review of Progress

11.2. The main objectives of the programmes for the development of these industries during the preceding Plans were to create large-scale employment opportunities, promote decentralisation and dispersal of industries, develop agro-based and ancillary industries, improve the skills of artisans and quality of their products, reduce the role of subsidies and step-up the production of consumer goods, essential articles for the masses and those having a large potential for exports. To achieve these objectives, the earlier Plans envisaged formulation of common production programmes for the small and large sectors, promotion of entrepreneurship, provision of a package of consultancy services, etc.

11.3. Inadequacy of complete and upto-date statistics for these industries particularly the traditional rural industries is a handicap for assessing the physical progress of the development programmes undertaken so far in achieving the objectives and strategy envisaged in the preceding Plans. However, according to the available data, fuller and additional full-time employment generated in most traditional rural industries was not upto the expectations. It will be observed from the Annexure at the end of this Chapter that over the last decade, the increase in the volume of production of some traditional industries was quite insignificant, although the value of their exports increased considerably. By and large, the objectives of the various programmes of improving the skills and production techniques, development of ancillary industries, growth of industries in rural and semi-urban areas and improvement in the levels of income, have not been achieved to an appreciable extent in a number of these industries. Common production programmes were not formulated in detail. There was also an increase in the number of schemes, agencies and institutions, without adequate arrangements for co-ordination and monitoring of their activities. Most of the artisans, craftsmen and other small entrepreneurs failed to get a package of assistance and services, especially scarce raw materials. The khadi and handloom industries also experienced marketing problems from time to time.

11.4. There was a rapid growth of small scale industries, most of which were also 'tiny' units having investment in plant and machinery upto Rs. one lakh. However, these units have come up largely in cities and large towns. The incidence of sickness in the sector also increased due mainly to deficiency in management, delayed payments by buyers, inadequacy of finance and marketing outlets.

11.5. A Centrally-sponsored scheme of Rural Industries Projects was initiated in 1962-63, with a view to promoting intensive development of village and small industries in selected rural areas. An evaluation study of the scheme has revealed that there had been some deviations in the implementation of the programmes to the extent that some part of the assistance was provided to relatively larger amongst the small scale units and also in towns which were excluded from the purview of the scheme. On the other hand, rural artisans did not receive adequate assistance, particularly in respect of technical advice, credit, training and marketing. Certain schemes were also initiated for the development of small scale industries under the Special Employment Programmes undertaken during 1971-74. Their impact, however, in terms of creation of employment opportunities, fell short of the expectations. Similarly, under the scheme of margin money assistance which formed a part of these programmes, assistance was provided mostly to relatively large industrial units in and around the metropolitan urban areas.

11.6. There was a substantial increase in the overall availability of institutional credit for small industries. The total advances by the commercial banks to these industries went up from Rs. 286 crores at the end of June, 1969 to Rs. 1147 crores at the end of December, 1975 and further to Rs. 1421 crores at the end of December, 1976. During this period, the number of small units assisted increased from about 56,980 to 2,69,300 and further to 3,89,200. Never-

theless, most artisans and craftsmen particularly those belonging to the poorer sections of the society and working in small towns and villages were unable to obtain their credit requirements.

Five Year Plan—1978—83

11.7. The rapid and widespread development of small industries including cottage, household and small scale industries is one of the major objectives of the Plan as a part of the primary goals of reducing unemployment and under-employment in the country. The major components of the strategy proposed to be adopted in formulating and implementing the development programmes for these industries to be taken up in the new Plan are :

(i) to generate opportunities for fuller and full-time employment by
  (a) revitalising and developing the existing traditional and other small scale industries, and
  (b) promoting intensive development of new viable small industries;

(ii) to raise the level of earnings of rural artisans, handloom weavers, raftsmen and others employed in these industries;

(iii) to promote the growth of these industries in rural areas and small towns; and

(iv) to reduce progressively the role of subsidies by providing these selectively for credit and development of skills, designs and marketing.

11.8. According to the new Statement on Industrial Policy announced in December, 1977, the main thrust of the policy will be on effective promotion of cottage and small industries widely dispersed in rural areas and small towns. The statement contains several policy measures for accelerating the pace of growth of these industries which are outlined subsequently along with the contents of the development programmes for different cottage and small industries. It has already been decided that no more licences should be issued to new industrial units within certain limits of large metropolitan cities having a population of more than 1 million and urban areas with a population of more than 5 lakhs as per the 1971 Census. While the number of industries reserved for exclusive development in the small scale sector has been significantly expanded, the Government will also consider introducing special legislation for protecting the interests of cottage and household industries with a view to ensuring that these activities which provide self-employment in large numbers get due recognition in industrial development.

11.9. Some assistance is already being provided for the development of selected small 'service' industries covering units engaged in repair and maintenance of machinery and equipment. The integrated rural-urban growth contemplated under the Integrated Rural Development Programme which will bring into its fold towns of upto 25,000 population, would throw up a number of opportunities for self-employment to the unemployed educated youth. Such opportunities like starting retail shops and various household services would be available to such youth who are enterprising. With a view to help them in availing of a variety of employment opportunities, it is proposed to consider provision of margin money assistance for starting selected small business and enterprises.

11.10. Credit : The Industrial Development Bank of India has taken steps to set up a separate wing to deal exclusively with the credit requirement of the cottage and small industries sector. It will co-ordinate, guide and monitor the entire range of credit facilities offered by other financial institutions for the sector, for whom separate wings will be set up in these institutions particularly the nationalised banks. The banks will be expected to earmark a specified proportion of their total advances for promotion of these industries. The policy of the Government will be that no worthwhile scheme for these industries is given up for want of credit.

11.11. In the light of the experience gathered from the working of the scheme of margin money assistance referred to earlier, a new scheme has been taken up for promotion of tiny industrial units in the rural and semi-urban areas. Varying rates of interest are being charged by the financial institutions from artisans, craftsmen, handloom weavers and other within and outside the cooperative fold and those being assisted by development agencies for different small industries. It is proposed to review the rates of interest with a view to remove certain anamolies. Institutional credit facilities will be suitably supplemented by the States and Union Territories particularly for the poorer sections of the society in backward areas, without involving over-lapping.

11.12. Arrangements for coordination : As pointed out earlier, there has been a tendency to proliferate agencies and organisations for the development of different cottage and small industries. This has tended more to confuse the average rural and small entrepreneurs. To overcome this, it is envisaged under the new industrial policy statement that there will be one agency in each district called the District Industries Centre, mainly to provide and arrange a package of assistance and facilities for credit guidance, raw materials, training, marketing, etc., including the necessary help to unemployed educated young entrepreneurs in general and custom services. These Centres will establish close linkages with the Development Blocks on the one hand and with specialised institutions concerned with the development of small industries on the other. It is the intention of the Government to extend this improved organisational pattern to all the districts over the next two to three years.

11.13. Initially, it is proposed to establish the District Industries Centres in most of the districts already covered under the scheme of Rural Industries Projects. For establishing these Centres, the staff of the Rural Industries Projects and the State Boards for Khadi and Village Industries will be suitably deployed, trained and, wherever necessary, strengthened to deal with the problems of the existing rural and such other industries which have potential for development in each district. The staff of the new Centres will work in

close consultation and collaboration with the concerned state-level Departments and institutions as well as the Central and other institutions functioning in the districts including the financial and voluntary institutions and associations engaged in the development of cottage, household and other small industries.

11.14. To ensure coordination, it will be necessary to constitute high-level committees not only at the district and State-levels, but also at the Centre. The main functions of these committees comprising the representatives of all the concerned departments, agencies and institutions including the financial institutions, would be to simplify the procedures and undertake a periodical review of the problems and monitor the progress.

11.15. Marketing : Besides the continued dependence of a significantly large number of different rural and other small industries for marketing on middlemen, an increasingly larger number of these industries has also been experiencing difficulties in marketing their products. Therefore, marketing assistance including those for market intelligence and surveys, testing facilities, quality control and standardisation of products of selected industries will receive special attention. Since the reservation of certain items of textiles for production in the handloom sector has not been effective, the Government will enforce the existing reservation and further extent it to other items. The items reserved for exclusive development in the small scale sector will be reviewed annually with a view to ensuring their effectiveness and also expanding the list of new products and processes capable of being manufactured in the sector. Measures such as purchase preference and reservation for exclusive purchase by the Government departments and the public sector undertakings will be used to support the marketing of their products. Greater efforts will be made to provide closer marketing linkages between the products of small scale industries and the requirements of medium and large industries particularly the public sector undertakings.

11.16. With a view to providing more extensive marketing assistance within the country for reducing the role of middlemen and intermediaries, it is proposed to provide margin money assistance particularly to the unemployed educated young entrepreneurs for setting up retail shops for the products of traditional and modern small industries, subject to the condition that a specified percentage of their total turnover is accounted for by the products purchased directly from these industries. A scheme on these lines will have to be supported by setting up of testing-cum-after-sale service centres for selected industries. Both these schemes will be taken up by the State-level corporations and entrepreneurs. It is also proposed to examine the feasibility of utilising the network of marketing outlets established by the Khadi & Village Industries Commission and organised industries for marketing the products of different small industries.

11.17. The existing activities of the institutions already engaged in promotion of exports of the products of different small industries will be suitably enlarged and diversified. More important activities to be undertaken by them will include promotion of linkages between the small producers and foreign purchasers, collection and dissemination of information about the pattern and potential of exports including suggestions for product development and design, freight charges, etc.

11.18. Training Facilities : Training facilities are another important input for raising the level of earnings of those employed in these industries as well as for creation of new employment opportunities. It is proposed to review the ongoing Central and States training schemes with a view to re-orienting these suitably in the context of the new strategy outlined earlier, making these more effective and avoiding any duplication. Besides training of the Central and State personnel engaged in extension and promotional activities, training facilities for artisans, craftsmen, workers and unemployed educated youth will be suitably expanded wherever considered necessary. Greater attention will be given to training of small entrepreneurs in management and unemployed educated youth so as to assist them to set up small industries and service units. In the light of the experience gained in the implementation of the craftsmen and apprenticeship training schemes, it is proposed to tie-up more effectively the training programmes with the requirements of industries by introducing suitable diversification in the trades and also by upgrading the level of training through advanced vocational training system. Since the Industrial Training Institutes are mostly urban-oriented, a scheme is under consideration for rural artisans training and a feasibility study-cum-survey is to be taken up in 1978-79. Besides, further efforts would be directed towards setting up of facilities for technical training in specialised and advanced categories such as electronics and processing instrumentation, chemicals, farm machinery trades and vocations suitable for women.

11.19. Technology and Research : Special measures are envisaged under the new industrial policy statement for ensuring an effective and coordinated approach for the development and wide-spread application of suitable small and simple machines and devices for improving the productivity and earning capacity of those engaged in different small industries. It will further be the endeavour of the Government to fully integrate such appropriate techniques of production with the broader programme of all-round rural development. Efforts will be made by the staff of the District Industries Centres to identify technological and other problems of small industries and to arrange for research and investigation on them through local and other concerned educational and technical institutions. For this purpose, the facilities for research and common services will be expanded.

11.20. Subsidies : The measures envisaged under the new industrial policy statement and also the development programmes outlined subsequently are intended to promote viable rural and small industries on a decentralised basis. It would be possible to achieve this pattern of development by progressively reducing the role of subsidies including sales rebate by providing these selectively for credit and development of skills, designs and marketing. It is, however, realised that some subsidies may be required for limited periods in respect of the poorer sections of the society engaged

in some traditional industries. Therefore, it is proposed to review the schemes involving subsidies and rebates so as to adopt a selective approach in regard to coverage and period.

Outlay

11.21. In the context of the proposed strategy, the development programmes will be reoriented and expanded. The Plan outlays will be supplemented by institutional finance as well as private investment. A total outlay of Rs. 1410 crores in the public sector has been provided in the Plan, the break-up is shown below :

Table 11.1 : Outlay on Village and Small Industries

Sl. No.	Industry	Fifth Plan		Plan Outlay
		1974-79 (outlay)	1974-78 (estimated expenditure)	1978-83
(0)	(1)	(2)	(3)	(4)
				(Rs. crores)
1.	Handloom Industry	99.92	80.63	280.00
2.	Powerlooms	3.25	1.53	6.00
3.	Khadi & Rural Industries	142.98	126.38	390.00
4.	Small Scale Industries	200.68[1]	121.89[1]	545.00[2]
5.	Industrial Estates	21.06	17.64	45.00
6.	Handicrafts	29.80	14.94	57.00
7.	Sericulture	29.68	19.23	70.00
8.	Coir Industry	7.66	5.55	17.00
		535.03[3]	387.79	1410.00

[1] Includes Centrally-sponsored schemes of the Rural Industries Projects to be merged into the District Industries Centres set up and Collection of Statistics.

[2] Includes Rs. 60.0 crores for the schemes of Craftsmen and Apprenticeship Training.

[3] Subsequently revised to Rs. 510 crores.

11.22. The outlay of Rs. 45 crores for industrial estates will be supplemented by the outlay made for the schemes of industrial areas under the programme for medium and large industries. In addition to the outlays made in the public sector about Rs. 2,000 crores are expected to be invested from private sources including banking and financial institutions. Thus, under the Plan, a total outlay of about Rs. 3,400 crores would be available for the development of household, cottage and other small industries.

Programmes of Development

11.23. So far the programmes for the development of different rural and small industries have consisted mainly of certain fiscal measures and a number of schemes for providing assistance and facilities in different forms to all types of these industries, without a careful assessment of their appropriateness and viability. This absence of focus and perspective has been responsible to a large extent for their sickness. Therefore, it is now proposed to formulate development programmes for some selected (i) industries based on in-depth studies of their present position, potential and problems; and (ii) 'growth' areas based on detailed inventories of the existing and potential resources of blocks and districts to be selected for integrated rural development including tribal, hill and other backward areas. By concentrating on a smaller number of carefully chosen industries and areas, the pitfalls of the approach adopted so far will be avoided.

11.24. While detailed studies of the present position and problems of the handloom, sericulture and the woollen carpet industries have been carried out, similar studies of the coir and leather industries are expected to be completed shortly. District-wise data from 1971 Census have been collected for six selected industries in respect of the registered, unregistered and household sectors in the urban and rural areas. These industries include food products, cotton textiles, textile products, wood and wood-products, leather and fur products, and beverages, tobacco and tobacco products. On an all-India basis, these industries represent about 70 per cent of the total units as well as the employment in the rural areas. The data have recently been circulated to the State Governments and Administrations of Union Territories so that their problems could be studied and suitable programmes and schemes for their development could be formulated and taken up on a priority basis, taking into account the relevant factors such as availability of raw materials, cost of production and marketing. The data collected for the recent Economic Census will also be utilised for the purpose. Meanwhile, a study of 8 industries has also been taken up to analyse the technologies and suggest the most suitable mix for development in the large, small and cottage sectors and also the policy instruments for achieving the mix. Steps are being taken to identify and formulate detailed development programmes for some selected industries including handicrafts which have comparatively larger potential for development, both for meeting the internal and external demand.

11.25. Development programmes as outlined elsewhere in the Plan will be formulated for the Blocks in a phased manner, with a view to formulate special programmes for integrated rural development covering mostly the backward areas. Besides the schemes for comprehensive agricultural development and for promotion of employment opportunities in the tertiary sector, these special programmes will include schemes for intensive development of small agro-based and other suitable industries. Promotion of cooperative societies facilitates artisans, craftsmen and workers to become owners/share holders of industrial units, as against wage earners. It is, therefore, proposed to revitalise the potentially viable industrial cooperative societies and to assist organisation of new societies by undertaking a concerted drive for the purpose and providing the necessary financial, managerial and marketing assistance.

11.26. *Handloom industry* : The strategy to be adopted for the development of the handloom industry has been outlined in the Chapter on Industry and Minerals. Based on a recent detailed study of the handloom industry referred to earlier, several special schemes have already been initiated with the objectives of providing full-time employment and higher earn-

ings for a substantially large number of the handloom weavers. These schemes include setting up of Intensive Development Projects (each covering about 10,000 handlooms) and Export-oriented Production Projects (each covering about 1,000 handlooms). About 2 lakh handlooms are expected to be covered shortly under the former Projects and about 20,000 handlooms under the latter Projects. These and other schemes particularly for provision of processing and training facilities, improvement of designs, extension of the cooperative coverage, will be expanded. The feasibility of production of yarn from small power-operated spinning frames on a decentralised basis is being examined. The full-time employment in the handloom sector is expected to increase from about 57 lakhs in 1977-78 to 92 lakhs in 1982-83.

11.27. *Powerlooms* : The approach in regard to the existing powerlooms is dealt with in the Chapter on Industry and Minerals. It is proposed to provide common processing and certain other service facilities in the areas where the powerlooms are already concentrated. The employment is expected to increase from 10 lakhs to 13 lakh persons during the Plan period.

11.28. *Khadi & Rural Industries* : The programmes for the development of khadi and rural industries have been largely implemented by the Khadi & Village Industries Commission and the State Boards for these industries on the one hand, and by the State Governments under the Centrally-sponsored scheme of Rural Industries Projects on the other. On the whole, as mentioned earlier, the progress has not been upto the expectations. It is, therefore, proposed to review the existing organisational structure of the Commission and the State Boards so that these could fulfil the roles assigned to them more effectively. The village industries currently under the purview of the Commission are already being reviewed and will be suitably expanded. As regards the Rural Industries Projects, based on an evaluation study referred to earlier, the State Governments have been advised to reorient the programmes in these areas and to ensure their speedy implementation, without deviations.

11.29. The programme for the production of khadi will be reoriented so as to increase the production of certain new varieties of cotton cloth like muslin khadi. Preliminary work has already been initiated for production of khadi from the admixture of cotton and polyester fibres. The schemes already taken up for the increased production of woollen and silk khadi will be expanded. These schemes supported by those for improvement of productivity, quality and designs, are expected to raise the earnings of the khadi spinners and weavers and lead to progressive reduction in the volume of subsidy and sales rebates. It is envisaged that these programmes will increase the value of production of khadi of all varieties from about Rs. 64.0 crores in 1977-78 to about Rs. 176.0 crores by 1982-83. During this period, the employment, mostly part-time, is expected to increase from about 10 lakhs to about 18 lakh persons.

11.30. Arrangements are proposed to be made for greater coordination in the formulation and implementation of the development programmes for the village industries under the purview of the Khadi & Village Industries Commission and the State Boards and for the development of other rural industries. The Commission and the State Boards will pay greater attention to formulation of detailed programmes for selected industries and areas and to intensify promotional activities like assisting the registered institutions and cooperative societies in adopting improved production and modern management techniques. Initially, special programmes would be drawn up and implemented for certain specific village industries like leather foot-wear and soaps. The programmes to be taken up by the Commission and the State Boards are expected to increase the part-time and full-time employment, from the present level of about 15 lakh persons to 56 lakh persons.

11.31. *Small Scale Industries* : The programmes for the development of small scale industries will be oriented mainly to rehabilitate the sick units, to assist the house-hold and rural industries to expand and to promote the growth of mostly tiny industrial units in rural areas and small towns. In order to assist the sick units and to prevent further incidence of sickness, steps will be taken to ensure adequate supply of raw materials and credit and marketing facilities. For achieving these and other aims, the activities of the Central and State-level institutions and agencies and also the schemes of assistance and facilities, will be suitably modified and enlarged.

11.32. The technical and other staff of the Small Industries Service Institutes, Branch Institutes and the Extension Centres will be suitably trained so as to be able to provide consultancy and other services to the existing sick units and to supplement the activities of the District Industries Centres so as to ensure a package of facilities and services to traditional artisans and other small entrepreneurs. Wherever considered necessary, the technical staff will be strengthened for promotion of traditional rural industries as well as the rural artisans not covered so far by the development programmes. The staff will also be deployed so that more intensive efforts could be made for promotion of these industries in the States and Union Territories identified as industrially backward and for the districts and areas to be selected for special development programmes.

11.33. The Central programmes for training and common service facilities in selected fields for meeting the requirements of small industries on a regional basis will be expanded. Other schemes for training will be coordinated with the existing schemes and institutions, particularly the craftsmen and apprenticeship training schemes, rural artisans programme and the Industrial Training Institutes. The National Small Industries Corporation will continue to supply imported machines on hire-purchase terms and also assistance to small scale units to participate in the Government stores purchase programmes. The organisational structure and the working of the Proto-type Development and Training Centres, tool rooms and other such centres will be reviewed so as to utilize more fully their equipment and personnel. The acti-

vities of the Small Industry Extension Training Institute will be re-oriented towards the development of mostly tiny units in the rural and semi-urban areas.

11.34. The existing guidelines for promotion of small scale industries as ancillaries to the large industries and undertakings in the public sector will be reviewed so as to make them more effective. Suitable measures will also be taken for ensuring prompt payments by large industries to small ancillary units. Formation of restricted partnerships will be suitably encouraged. Studies of selected small industries having considerable potential for development including modernisation, will be taken up on a priority basis.

11.35. The schemes to be taken up by the States and Union Territories will be formulated by them on the basis of detailed studies of specific industries and the assessment of local resources and potential of selected growth areas referred to earlier. These programmes will have to be coordinated with concerned State and Central departments and other institutions such as Rural Electrification Corporation. The activities of the State Corporations concerned with the development of these industries will be enlarged particularly for supply of machines on hire-purchase terms, consultancy services and collection and dissemination of information relating to internal and external markets. These institutions will work in close cooperation with the District Industries Centres.

11.36. *Industrial Estates* : New industrial estates of different types will be set up and developed sites provided for meeting the needs of mainly artisans, craftsmen and other small entrepreneurs in rural and semi-urban areas. These, as far as possible, will form part of the development programmes for selected industries and areas. Greater efforts will be made to ensure provision of the required infrastructure facilities like power and water and also to construct functional-type sheds so as to keep down the construction costs to the minimum.

11.37. The programmes for the development of small scale industries including industrial estates are estimated to provide additional full-time employment opportunities for about 30 lakh persons by 1982-83.

11.38. *Handicrafts* : Based on a detailed study of the problems and potential of the woollen carpet industry, a massive programme for training of carpet weavers has already been initiated so as to expand the production base. The programme will be reviewed from time to time and expanded on the basis of the export potential. Steps have already been taken to identify some more crafts having large potential for development for meeting the demand within and outside the country. It is proposed to undertake detailed study of these handicrafts so as to formulate specific schemes for their development. At the same time, greater efforts are being made to identify the traditional crafts in different areas which are languishing fast ; suitable schemes for their development will also be taken up. Along with the new schemes for these selected crafts to be undertaken, the other continuing schemes particularly for improvement of designs, training, provision of marketing assistance, product diversification and common service facilities, will be expanded. The concerned State level corporations will be assisted to arrange supply of scarce raw materials to craftsmen, improved appliances and information regarding the export potential. Arrangements will be made for bringing together the craftsmen and marketing agencies so as to progressively reduce the role of the middlemen and intermediaries.

11.39. It is estimated that the number of persons employed in handicrafts will increase from the present level of about 18 lakhs to 24 lakhs. The target of exports will be worked out after the formulation of detailed development programmes for selected and other handicrafts.

11.40. *Sericulture* : Several special schemes have already been initiated for increasing the production and improving the quality of mulberry and non-mulberry silk and reducing the cost of production. These schemes cover a large part of the tribal areas. The more important of these schemes are for production of bivoltine seeds, expansion of the acreage and irrigation facilities in the mulberry growing areas, increased production and supply of disease-free seeds, plantation of food-plants under the social forestry programme and preliminary work for undertaking large programme for the production of oak tasar silk in the north-eastern region. These programmes are being supported by enlarged facilities for training, extension and research. A raw material bank has also been formed mainly to check fluctuations in the prices of mulberry silk.

11.41. The schemes already initiated will be expanded and it is estimated that the production of raw silk will increase from the present level of about 35 lakh kgs. to about 62 lakh kgs. by 1982-83. During this period, the value of exports is expected to increase from Rs. 27 crores to Rs. 60 crores. It is expected that the employment will increase during this period from about 36 lakh persons to about 44 lakh persons.

11.42. *Coir Industry* : The development programme undertaken so far for the coir industry which provides employment to about 5 lakh persons, has consisted of schemes mainly for revitalisation of the coir cooperatives and research for improving the quality and product diversification. Progress of these schemes has been slow. The volume of exports has continued to remain almost stagnant. These and other problems of the industry are now being reviewed in detail by a high-level study team which is also to recommend schemes and measures for the development of the industry. A suitable development programme will be formulated and implemented on the basis of the recommendations of the study team which are expected to be available shortly.

11.43. The levels of employment and production anticipated in 1982-83 are indicated below :

Table 11.2 : Employment and Production—Village and Small Industries

Sl. No.	Industry	Employment (Lakh persons) 1977-78 (estimated)	Employment (Lakh persons) 1982-83 (anticipated)	Production 1977-78 (estimated)	Production 1982-83 (anticipated)
(0)	(1)	(2)	(3)	(4)	(5)
1.	Handloom Industry .	57.10	92.00	2300	3700 (m. mtrs.)
2.	Powerlooms . .	10.00	13.00	2900[1]	3900[1] (m. mtrs.)
3.	Khadi and Rural Industries	25.60	74.48	270	2561 (Rs. Crores)
4.	Small Scale Industries .	27.68[2]	57.68	6700[2]	26700 (Rs. Crores)
5.	Industrial Estates . .				
6.	Handicrafts . . .	18.20	24.00	550	800 (Rs. crores)
7.	Sericulture . . .	36.00	44.00	35.4	62.5 (Lakh Kgs)
8.	Coir Industry . .	5.00	5.00	n.a.	n.a.

[1] Includes art-silk fabrics.

[2] Relates to calendar year 1976.

n.a. Not available.

11.44. In the context of the enlarged programmes to be taken up under the new Plan, it will be necessary for the all-India organisations concerned with the development of different industries to take suitable steps for periodical review of the policies, programmes and problems of these industries. Besides a closer liaison with the concerned State departments and institutions for monitoring the programmes, quick studies will also be undertaken for assessing the impact of some of the major programmes especially on the level of employment, earnings and exports. A reference has already been made about the need for setting up a high-level coordination committee at the Centre to review from time to time the progress of the programmes of all these Boards and the State Governments and also to ensure coordination in respect of important policies and programmes like for credit, training, marketing and exports.

RE

Village and Small Industries

Sl. No.		1965-66	1970-71	1974-75	1977-78 (likely)
(0)	(1)	(2)	(3)	(4)	(5)
A.	Production				
1.	Cotton cloth				
	(i) Handlooms (m. metres)	3,056[1]	2280[1]	2290[1]	2300
	(ii) Powerlooms (m. metres)		1412[1]	1678[1]	1800
2.	Khadi				
	(i) Quantity (m.sq. metres)	85	57	59	72
	(ii) Value (Rs. in crores)	26.81	25.85	43.28	64.10
3.	Village Industries (Rs. crores)	55.87	85.60	136.31	206.24
4.	Raw silk (lakh kgs.)	21.50[1]	28.40[1]	29.92	35.40
5.	Small Scale Industries value (Rs. crores)	N.A.	N.A.	4,932[1]	6700[2]
B.	Exports				
1.	Cotton handloom fabrics and manufactures (Rs. crores)	12.57[1]	12.40[1]	107.20	210.00
2.	Silk fabrics & waste (Rs. crores)	2.82[1]	14.23[1]	12.66	27.00
3.	Handicrafts (Rs. crores)	27.58	80.30	194.38	440.00
4.	Coir Products				
	(i) Quantity (000 tonnes)	74.23	52.21	42.00	45.00
	(ii) Value (Rs. crores)	17.47	13.87	17.60	25.00
5.	Small Scale Industries	N.A.	171.00	537.90	1000.00
C.	Growth of Small Scale Industries				
1.	No. of registered units (cumulative lakhs)	1.05[3]	2.38[3]	2.20[1]	2.60[2]

[1] Relate to Calender year.

[2] Relate to calender year 1976.

[3] Includes units also outside the preview of DC(SSI).

N.A. Not available.

Chapter 12

Industry And Minerals

Review

The pattern and growth of industrial development over the last 20 years has been governed by the Industrial Policy Resolution of 1956. It envisaged speedy industrialisation with particular emphasis on the development of heavy and machine-building industries and a predominant role to the public sector. Several other objectives were also enunciated such as the complementary role of the small-scale sector, regional dispersal, prevention of growth of private monopolies and concentration of economic power.

12.2. The massive investments in the industrial and mineral sector, particularly from the beginning of the Second Plan, have brought about a significant transformation of the industrial scene. There was a rapid and almost continuous growth in industrial production during the first fifteen years of the planning period. Industrial production which increased at an average rate of 7 per cent in the first decade of planning (1950-51 to 1960-61) recorded an increase of around 9 per cent per annum during the next four years i.e. 1961-62 to 1964-65. The performance since then, however, has been very uneven and substantially below the earlier achievements and projected expectations. The growth declined to 5.3 per cent in 1965-66, was almost stagnant in the subsequent two years, witnessed a spurt to 7.4 per cent in 1969-70 and hovered around 3 to 4 per cent over the next five years. A significant improvement took place in 1976-77 when the index of industrial production showed a growth rate of around 10 per cent. However, on the whole, during the decade 1965 to 1975, the average annual growth rate was no more than 4 per cent and about 6 per cent during the period 1974-75 to 1977-78.

12.3. The reasons for the fluctuations in the rate of growth of industrial production are many and complex and no single factor can be identified. There does appear, however, to be a close relationship between the trends in total investment and particularly public investment and industrial growth. The period 1961-62 to 1964-65 when a 9 per cent growth rate was achieved, the slump to 1.6 per cent during 1966-69 and the recovery to about 6 per cent during the Fifth Plan period broadly follow the *trends* in total and public investment during the corresponding periods. As is natural, the most sensitive of the various components of industrial production to investment rates is the capital goods sector and the least the consumer goods sector.

12.4. In addition to the trends in investment which tend to affect demand, there have been several other factors which have contributed to slowing down growth of industrial production e.g. lack of capacity in certain industries like cement, paper and fertilizer, shortage of power, transport, fuel and till recently key imported materials, unremunerative administered prices and at times disturbed industrial relations and in some cases poor management.

12.5. Despite this, the achievements in the industrial sector have been impressive and India ranks today amongst the important industrial nations. Indigenous capability has been built up to the point, that except for certain industrial raw materials such as petroleum, sulphur, rock phosphate and certain non-ferrous metals where our natural endowment is limited and certain sophisticated items of machinery, there are very few areas in which imports are necessary for sustaining the growth of the economy. On the contrary, engineering goods have become the largest component of our exports and the share of other non-traditional manufactured commodities is growing.

12.6. Another important and welcome development is the dominant role achieved by the public sector particularly the Central sector and its now accepted pace-setting role. The total investments in the Central public sector as on March, 1977 amounted to Rs. 11097 crores. As a result of improved managerial inputs many of the public units now compare well with the better units in private sector and in several sectors efficiency levels have reached commendably high standards. Its share of output in the organised industry and mining has grown from 8 per cent in 1960-61 to 30 per cent in 1975-76. While the need for further improvements in project implementation, capacity utilisation, cost reduction, rate of technological progress, and inventory control will continue to require close attention, a major factor responsible for the relatively low return on public sector investment has been the price constraints under which many public sector undertakings work. A second factor which has depressed return is the considerable number of sick industries particularly in the textile and engineering industries, which the Central Government has had to take over in the interest of maintaining employment. Several of these have already been nursed back to health and the prospects for most of the rest are promising. Thirdly, note must be taken of the fact that by and large the public sector has entered technologically complex areas where it has to do pioneering work. Longer gestation period and some allowance for the learning curve must be made. Another favourable development in the public sector as well as to some extent in the private sector is the growing attention being paid to R&D. This augurs well for the goal of achieving technological self-reliance. With some notable exceptions, however, the performance of the large number of corporations set up by the State Governments requires to be improved. While

the investment in these Corporations is not as large as in the Central sector, the substantial losses which they sustain are a drain on the resources of the States. Lack of professional management combined with absence of real autonomy in management are some of the basic weaknesses which need to be corrected.

12.7. The organised industrial sector does, however, present several disturbing features. One of the more disturbing of these features is the relative decline in the growth of the small scale sector as compared to the medium and large sector. While detailed information regarding the small scale industries below the factory level is not available, ASI data reveal that the share of the small scale sector in industrial production in terms of value added fell from 19.5 per cent in 1968 to 16.1 per cent in 1975-76.

12.8. The various policy measures taken by the Government such as the MRTP Act and the licensing policy have largely succeeded in restricting the growth of capacity of larger houses in areas in which the small and medium enterprises could cater. However, at the macro level the share of the large business houses in the total industrial activity has grown. To some extent, this was the result of Government's own policies which restricted the areas of growth of large and foreign companies to capital intensive industries on the grounds that the smaller entrepreneurs would not be able to raise the resources or possess the requisite managerial and technological competence to handle efficiently such large investments.

12.9. Another unfavourable aspect of the industrial scene is the imbalance that exists in the industrial development of different regions. Attempts to correct this by massive investments in Central Sector projects in the expectation that this would have a wide ranging 'ripple effect' in stimulating small and ancillary industries have not succeeded in many States such as Bihar, Orissa and Madhya Pradesh. On the contrary, these States have been forced to commit a large portion of their resources to providing these projects with capital intensive infrastructural inputs such as power and water to the detriment of other priority sectors of development.

12.10. Likewise while all States have set up promotional agencies to attract industries, the natural tendency of entrepreneurs to go where the infrastructure is strong, markets are close and various services are readily available cannot be ignored. It is clear therefore that the approach to stimulating industrial development regionally will require to be changed and the same approach will not work on an all India basis. What is needed therefore is a strategy which identifies clearly the natural, physical and human endowments and potential in different districts and regions and identifies viable projects which are based on these resources. In the matter of regional imbalances, a major cause of concern is that State Governments have not succeeded in preventing the growth of industries within and close to large metropolitan cities adding immeasurably to the problems of urban congestion.

12.11. Schemes for giving capital subsidies to the backward districts again appear to have been used to a much larger extent by the developed States. The whole policy of tackling the economic (and not merely industrial) development of backward areas is thus being reviewed.

12.12. Another weakness of the industrial scene is the high cost of some of its products as compared to international prices. This has partly arisen out of the absence of healthy competition, a situation which industrial licensing tends to foster. High tariff barriers and tight controls on imports have tended to shield these units from international competition and protected them from the consequences of inefficiency. To some extent this position has changed as a result of the relatively low rate of inflation in India as compared to other countries. High costs have sometimes been a direct outcome of the Government's licensing policy. Where the demand was large enough to sustain only one plant of an economic size, several plants with suboptimal capacities were licensed in the name of diffusing ownership and preventing monopolies. In the policy of import substitution also there has been insufficient attention to costs and a few industries have been set up where the industry cannot be a low cost producer by international standards. While this may be necessary in certain strategic areas, it was not essential in many others.

12.13. Perhaps the most serious lacuna in our industrial planning has been the lack of attention paid to the employment implications in choosing technologies. Reference to this has been made in the chapter on Employment and Manpower. The main victim of this policy has been the cottage sector where the growth of industries like textiles, oil crushing, soap making, matches, leather and leather goods has been stifled. Another area in which industrial development could have been directed better both from the point of view of cost reduction and employment generation is the development of ancillaries particularly by way of offloading existing low technology activities to the small scale and ancillary industry. While there have been areas and industries which have done well in this field, the rate of growth of ancillaries suggests that inadequate attention has been paid to this problem.

12.14. Pricing policies in the past have often run counter to our growth priorities in the private sector. In the interests of containing inflation, prices of products have in the past been pegged to such unremunerative levels that all new investments have come to a halt. Investible funds have been diverted to low priority areas. The problem has been aggravated in high priority industries, e.g. cement and paper where the capital costs of new plants have gone up sharply in the last five years.

12.15. With the passing of the years, foreign investment has played a progressively diminishing role. With the exception of the drug industry and a few consumer goods industries where they are dominant, their share in the total industrial economy has fallen. Although policies were announced as early as 1970 for restraining the growth of foreign Companies operaing in low priority areas, it was not until recently when the amended Foreign Exchange Regulation Act (FERA) was passed that this policy began to be implemented seriously.

12.16. The growing capital intensive nature of industry and relatively high corporate tax rates have increased the dependence of the organised private sector on financial institutions. This has meant that

the role of financial institutions in financing new ventures has grown substantially. Increasingly, therefore, the agencies which determine the pattern and structure of industrial growth are the term lending institutions rather than the Industrial Licensing Committee which at best can play a negative role. Since this is not the purpose for which these institutions were set up, some new mechanism would have to be devised for ensuring that the flow of funds from the financial institutions is in accordance with national priorities.

12.17. The incidence of sickness in large and medium scale industries has increased in recent years ; and in the case of some of the traditional industries like cotton textiles, jute textiles and sugar, the economic viability of a large number of units has been seriously eroded. The phenomenon of industrial sickness not only tends to aggravate the problem of unemployment, but also renders infructuous capital investment and generally creates an adverse climate for further industrial growth. While in advanced countries where there are adequate social security benefits, this is accepted as a normal feature of the industrial scene, such sickness has much more serious economic consequences in a country where unemployment is a major problem and resources are scarce. In cases where the incidence of sickness is on an industry-wise basis, e.g. cotton or jute textiles, the remedy has to be found by appropriate policy adjustments to improve the viability of the industry as a whole. In addition, specific measures may be needed to provide support to the weaker units in the industry to overcome their immediate or accumulated problems.

12.18 In a number of other industries, however, individual units face closure. The reasons vary from case to case and, sometimes, such closures are the result of wrong investment decisions. While in any dynamic economy there are bound to be some enterprises which are on the decline and may have to be closed down, it is necessary to ensure that signs of incipient sickness are detected at an early stage and corrective action taken so as to avoid closures resulting in the loss of livelihood to the workers. Administrative and institutional arrangements are necessary to deal with the phenomenon of sickness in medium and large-sized industrial units. Take-over of management or nationalisation of such units by itself does not always provide the solution; and it is necessary to evolve and implement programmes of restructuring of capital, phased programme for meeting the liabilities and a selective programme of modernisation or diversification. Revival of sick units necessarily involves investment of scarce capital; and it is, therefore, necessary to ensure that the cost of maintaining existing employment is not disproportionate to the investment required for the creation of new employment.

12.19 In a few cases sickness can arise out of government policy as is the case with the controlled cloth policy when applied to textile mills which were not in a particularly healthy state to start with. Uncontrolled expansion of the large units in an industry overwhelming the smaller ones is also one of the contributory causes of sickness. A fall in demand of single consumer as in the case of wagon industry is another. However, perhaps the most important of all the causes of sickness is the incompetence or the cupidity of the management. Clearly the problem of industrial sickness is an area to which Government must give high priority.

Industrial Policy in the Five Year Plan 1978—83.

12.20 This review of the past may help in clarifying the general strategy and policies proposed to be adopted in the Plan. The comfortable resources of foreign exchange and the buffer stocks of foodgrains provide options which were not open to us in the past. As the level of public investment is expected to reach 12 per cent of GNP at market prices by 1982-83 as compared to a level of 8 per cent in the beginning of Fifth Plan, the demand should not pose in general a constraint on growth of industrial production. It is clear that the single most important prerequisite for increasing the rate of growth of industrial production is the need to stimulate the demand for all classes of manufactured goods-consumer, intermediates and capital.

12.21 The Plan proposes an average rate of growth of industrial production of 7 per cent. The broad strategy is based on the premise that the big increase in investment that is proposed in employment intensive activities like agriculture and allied activities, irrigation and in infrastructure like power and roads and minimum needs like water supply health, primary education and housing will stimulate the demand for a wide range of mass consumer, intermediate and capital goods. In most of these industries except a few like cement, fertilizer and paper there is already adequate capacity and the Plan will thus depend heavily on the better utilisation of the capacities already created.

12.22 An important policy change that will be made is in the area of choosing technologies which further contribute to raising employment without adding significantly to costs of production. One of the instruments for achieving this is the reservation of industries for the cottage and small scale sector as has been spelt out in the Industrial Policy Statement announced in Parliament. In addition, studies are being carried out on the technological options in 8 industries. Based on this, policy options on the appropriate technology to be adopted will be examined.

12.23 Given the resource limitations and national priorities, it follows that while there will be a step-up in the public sector outlay on Industries and Minerals in absolute terms its share of the public sector outlay will have to come down. For large and medium industries and minerals, the public sector outlay will grow from Rs. 9660 crores to Rs. 13,340 crores, but its share of the total public sector outlay will fall from 25 per cent to 19 per cent. On the other hand, an almost three fold increase in the investment in Cottage, Village and Small Industries is envisaged. Backed by the increased areas of reservation for these types of industries and a more effective mechanism to see that the restrictions are enforced, a significant step-up in the employment and output of this sector is expected. The falling trend in the share of industrial production contributed by the small scale sector during the Fifth Plan will, it is expected, be arrested and reversed.

12.24 A conscious strategy will be adopted for drawing down our foreign exchange reserves by planning imports in a number of capital intensive industries such as steel, non-ferrous metals and fertilizers. This will also enable the limited rupee resources to be made available for key sectors of the plan such as power, irrigation, agriculture and minimum needs areas in which there is little scope for imports. In certain areas such as coal and petroleum it will help the conservation goals. However, at no time will the gap between demand supply be allowed to grow to a point where it accounts for more than a small proportion of the international trade in that commodity. Thus substantial investments for new starts are proposed in areas such as fertilizers. In order that this strategy does not create a long term balance of payments problem the drive for increasing export will be stepped up in sectors where we already have surplus capacity and also the know-how such as textiles, or in sectors where there is low capital intensity and high employment potential like leather and leather goods, engineering products, especially in the electronics area, handicrafts and a variety of agricultural and marine products.

12.25 The Industrial Policy Statement has laid down the approach that will be adopted in the case of large and foreign companies. In capital intensive fields in which these houses are permitted to enter preference will be given to medium entrepreneurs and public sector corporations so that further concentration of economic power can be curbed. Greater use will be made of instruments like the MRTP Act to this end and steps to professionalise the management of family owned business will be considered.

12.26. It is recognised however that a modest rate of growth is a necessary precondition of industrial health and if these large and foreign houses are not to fall sick such growth may have to be considered. In socio economic terms what is important is that the economic power they wield is not used against the public interest. A major instrument which is available to Government, but which has been neglected is its leverage on the company through the equity and loans it has given to these large houses from term lending institutions and the scheduled banks. It is proposed, therefore, to examine ways and means by which the financial stake of Government controlled institutions can be put to better use. The same means will be also used to help detect incipient sickness in companies and remedial action taken whether it calls for reexamination of Government policies or changes in the company's management.

12.27. A comprehensive review of the whole problem of backward areas and the strategies proposed to deal with them has been dealt with in another chapter of the Plan.

12.28. Reference has been made earlier to the high cost of some domestically produced goods. In order to introduce a degree of competition which may help in improving quality and reducing costs, it is proposed to liberalise imports in certain well defined areas where the need for such competition is felt, relying principally on the tariff barrier to protect the domestic industry. One of the causes of high domestic costs was the automatic export obligation imposed by Government in areas where domestic production costs are higher than international ones as a result of which the domestic market was forced to subsidise the exports. This policy will be reviewed as announced in the Industrial Policy Resolution. In capital intensive industries where there are substantial economies of scale the policy of fragmentation of capacity in the interest of avoiding monopolies leading to the creation of multiplicity of sub optimal units will be reviewed and preference given to setting up of units which are largely, if not fully competitive, in the international market. Typical examples of those are petrochemical plants, synthetic fibre units, fibre glass units, etc. Any attempt at exploitation of the consumer will be controlled through other suitable measures including administered prices and imports.

12.29. Government have decided that the basis of administered prices will be a reasonable rate of net post-tax return on the net worth of the company. The minimum rate of return will provide a reasonable margin over the long term bank deposit rate and will depend upon the extent of risks and complexity in the industry concerned. It is expected, therefore, that apprehensions of unreasonable restrictions on prices will not inhibit private investment nor lead to industries falling sick.

12.30. Industries which are basically unviable or cannot stand up to limited international competition in certain specified product areas which the liberalised import policy will create will be allowed to close down. The list of products and industries reserved for the cottage and small scale sector will be reviewed periodically and if possible enlarged consistent with the prices to the consumer being kept at reasonable level. The machinery for preventing encroachment by the non-small scale sector on the small scale and of both on the preserves of the cottage sector will be strengthened.

12.31. In the case of foreign companies, FERA guidelines will be implemented. The basis of this policy is that foreign equity is not regarded as making any sizeable impact on the country's requirements of capital and is therefore welcomed only if it brings technological know-how which cannot otherwise be bought and assimilated. This narrows the range of foreign investment, particularly foreign majority equity to a relatively small number of industries. Existing foreign companies if they wish to retain foreign majority shareholding will be required to operate predominantly in technologically sophisticated areas or reduce their equity to levels below 40 per cent.

12.32. Mention has been made in the review of the role of the financing institutions. Mechanisms for bringing about a closer coordination between these institutions and Government so that funds flow preferentially into priority areas are being examined. A review on the simplification of the licensing procedure has been completed and is expected to be announced shortly.

12.33. Several of the public sector corporations in the State Government will require extensive inputs of professional management if they are to become viable. Based on the experience of the Central public

sector undertakings, State Governments will be requested to consider the establishment of expert top management Selection Boards, the creation of equivalents to the Centre's Bureau of Public Enterprises and the adoption of norms and conventions dealing with the relationship between Government and autonomous corporations which encourage their development into soundly managed companies.

12.34. Reference has been made to the loss of industrial production owing to labour unrest. This has been particularly severe in recent months. While inter-union rivalry and politicisation of trade unions will continue to be problem areas, the real malady goes much deeper—the lack of a sense of involvement of the worker in his work and his company. While programmes for worker participation in industry are certainly a means to this end, a basic attitudinal change on the part of both management and labour is required. In bringing about this change the greater share of responsibility must clearly be with the management. A Committee has been set up to recommend a comprehensive scheme to provide for the participation of the workers at different levels of management in industrial establishments and undertakings. An Industrial Relations Bill is also under consideration.

12.35. The Chapter on the Five Year Production Plan in Perspective has brought into sharp focus the problem of conservation of non-renewable resources, especially in the area of minerals. The Plan envisages positive steps in directions such as increased imports of mineral oil and coking coal. The policy on exports of other minerals in short supply such as chromium and manganese will be reviewed. In view of its rapidly growing usage as a strategic industrial material, the policy of exports of silver may also require reappraisal.

12.36. Many of the constraints which hampered the growth of industrial development during the last two Plan periods—shortages of infrastructural and energy inputs like transport, power, fuel oil, coal have either disappeared or are being progressively minimised. The foreign exchange position is such that key imports required to sustain industrial growth will be freely available. With the massive programme of public investment proposed, demand for all categories of industrial goods—consumer, intermediate and capital should reach satisfactory levels. The public sector which provides many of the key inputs required by industry is poised to meet fully the demand that will be made upon it. Likewise, the private sector will also be required to grow at a significant rate and the sluggishness which has been a feature of the growth rate of the private sector in recent years, is expected to be overcome. Given the measures that are being proposed to retain price stability and barring unforeseen situations, there appears to be no reason why the forecast of 7 per cent industrial growth cannot be reached and even exceeded.

12.37. The capacity and production targets for selected industries for 1982-83 are presented in Annexure I. Within the overall targets proposed the organised private, joint and cooperative sector has considerable room for expansion within the framework of the broad policy. The major fields in which these sectors are expected to contribute significantly to additional capacity and production are fertilizers, cement, paper, textiles (spinning sector), chemicals, pesticides, drugs and pharmaceuticals. Except in highly capital intensive industries, it will be the policy of the Government to give preference to new and medium entrepreneurs.

12.38 The overall outlay is envisaged at Rs. 13,340 crores; Rs. 12,464 crores in the Central Sector and Rs. 876 crores in the State Sector. The details of the Central programmes are given in Annexure II. Of the Central Sector outlay, approximately Rs. 8,300 crores will be required for ongoing schemes and Rs. 4,100 crores for new starts. The broad break-up of this outlay as between the major sectors is given below :

Table 12.1 : Major Sectorwise Outlays : 1978-83

Sl. No.	Industry	Continuing schemes including Renewals & replacements and S & T	New Schemes	Total
(0)	(1)	(2)	(3)	(4)
				(Rs. in Crores)
1.	Steel	1976	515	2491
2.	Coal	892	958	1850
3.	Petroleum	2335	215	2550
4.	Fertilizers	518	1131	1649
5.	Non-Ferrous Metals	236	191	427
6.	Heavy Engineering	256	341	597
7.	Petrochemicals	268	213	481
8.	Cement	58	129	187
9.	Paper	321	45	366
10.	Electronics	78	1	79
11.	Drugs & Pharmaceuticals	62	45	107
12.	Iron Ore	513	15	528
13.	Textiles	100	..	100

It will be observed that petroleum, coal, metals and fertilizers account for the bulk of the outlay both on continuing and new schemes. This reflects the priorities implicit in the Plan. In the case of metals, the large investment projected in the Plan is primarily on account of the continuing programmes of Bhilai and Bokaro currently under implementation; investment on new starts is relatively small.

12.39. The Plan provision includes adequate outlays under the Ministries and public sector undertakings to support research and development activities related to meeting the needs of the industry. Provision has also been made for replacement, rehabilitation and technological improvements in existing undertakings in the public sector to maintain the health of these industrial units at a satisfactory level.

Industrial Programmes

12.40 The salient features of the industrial programme envisaged for the Plan are briefly indicated in the following paragraphs :

12.41 *Iron and Steel* : The production of saleable mild steel was practically static during the Fourth Plan period. Since then, there has been a considerable increase in production primarily through better utilisation of capacity. The capacity utilisation of integrated steel plants (excluding Bokaro which is in the gestation period) increased from 65 percent in 1973-74 to 92 per cent in 1976-77.

12.42 The construction of steel plants has been characterised by serious slippages in schedule and considerable cost over-runs. Steps for more closely monitoring the progress of construction and taking necessary remedial action in time, are being taken.

12.43 The demand for saleable mild steel in 1977-78 is placed at 6.94 million tonnes. This is expected to rise to 10.9 million tonnes by 1982-83 and 15.4 million tonnes by 1987-88. Production is expected to go up from 7.73 million tonnes in 1977-78 to 11.8 million tonnes in 1982-83. While production will be in excess of the aggregate demand, there will be imbalances as between categories of steel. The demand for shaped products is expected to outstrip supply by 1982-83, however, flat products would continue to be in surplus till 1987-88.

12.44 With the constraint of rupee resources and relatively comfortable foreign exchange situation, the creation of additional steel capacity could be phased so as to provide for a *net* import of about one million tonnes per annum. This situation is expected to arise around 1986-87. As the shortage will be mainly in shaped products, the additional capacity will need to be planned for this category of steel. The precise time phasing and the manner of creation of additional steel capacity will need to be studied more closely.

12.45 The investments projected for the Plan provide for the completion of programmes under implementation as also the further expansion of Bhilai and Bokaro to optimise the in-built capacity in these units, balancing facilities in other units and for adequate replacements and rehabilitation to maintain them in a satisfactory condition. Further, provision has also been made on a tentative basis, for a start to be made on creation of additional steel capacity to be realised in the subsequent Plan period. Of the outlay of Rs. 2491 crores proposed for the steel Plants, approximately Rs. 1976 crores are on on-going projects.

12.46 In order to optimise the utilisation of by-product slag produced in the steel plants, provision has been made for setting up slag cement capacity. Further, provision has also been made for enhancing the captive power capacity in the steel plants to insulate them, as far as possible, from the fluctuations in the power availability from the public utilities. An experimental kiln for producing sponge iron using solid reductants is being put up.

12.47 Considering their inherently unfavourable economics for producing mild steel, no additional mini-steel plants for production for mild steel will be set up. It is expected that existing mini-steel plants would increasingly switch-over to production of steel castings and alloy and special steels for which these are particularly suited.

12.48 *Iron Ore* : A production target of 65 million tonnes is envisaged in 1982-83, corresponding to a domestic demand of 25 million tonnes and exports of 40 million tonnes, including 7.5 million tonnes from the Kudremukh project. The export target takes into account the trends in world iron ore trade as well as the desirability of limiting exports to the extent of optimising the investments already committed on mines, railways and ports.

12.49 The trade in iron ore is proposed to be diversified to include fines and if possible, pellets. A token provision has, therefore, been made for a pellet plant. A decision on its implementation would, however, depend on a firm market being established and the profitability being assessed.

12.50. *Non-ferrous metals* : Long-term perspective of the availability of non-ferrous metal ores, other than bauxite, underscores the need for conscious decision to conserve these resources to be utilised over a longer span of time.

12.51. Keeping this in view, no new major mining projects other than the exploitation of East-coast bauxite deposits for production of alumina, are proposed to be undertaken during the plan period. The programmes are limited to completing the existing schemes and providing adequate investments for technological improvements and balancing facilities to obtain maximum output from investments already committed. Even so, significant increase in output in non-ferrous metals, would be realised. The manner in which additional capacity should be created for aluminium will be considered further after the various options available are carefully examined.

12.52. *Engineering industries* : The bulk of our requirements of capital goods and other engineering equipment is now being met from within the country. Contrary to the popular impression, the shift in emphasis to rural and agricultural development in providing for essential infra-structural and other inputs like transport, power, cement and fertilizers will make a substantial demand on the output of the engineering sector. Construction machinery for irrigation projects, diesel engines and pumps for agriculture, equipment for fertilizer, cement and power projects, tractors and ancillary equipment, transport vehicles, structural steel for warehouses and storage plants are typical examples.

12.53. Fortunately, a strong base in a wide range of engineering industries has already been built-up. The emerging requirements could, therefore, be substantially met from the capacity already built-up with some diversification in the production facilities to suit the changing demand. Keeping this in view, the main strategy in the Plan would be to limit investment in heavy engineering units to those required for balancing facilities, modernisation, technilogical up-gradation

and improvements in quality and productivity. Thus, investments are postulated for increasing the output of power equipment arising out of a larger power programme, change in the unit size of equipment such as for 500 MW sets, diversification and rationalisation of production to meet demand and for modernisation of the sick units in the Eastern region. No new units are proposed to be set up in the public sector in the heavy engineering industries.

12.54 Export will continue to be relied upon particularly in such industries in which domestic demand is not likely to be adequate to ensure reasonable capacity utilisation. Equally, the domestic engineering industry will be selectively exposed to international competition in order to induce it to improve quality and reduce costs. Wherever necessary a more liberal policy for the import of technology in selected areas would be followed to improve our capability to face international competition.

12.55 Recognising that industrial units cannot afford or be allowed to stagnate, the present provision under the licensing policy for automatic growth may need to be enlarged and simplified. This would have the advantage of creating increased production at minimum cost and in the shortest possible time, apart from providing an incentive to the efficient units to grow.

12.56 Provision has been made for the expansion of the Vizag and Cochin Shipyards. A substantial increase in the output is envisaged from 66400 GRT in 1977-78 to 238000 GRT in 1982-83. The establishment of one or more new shipyards is under consideration but the current indications are that no new start is likely to be required till the end of the Plan period or at the beginning of the next Plan.

12.57 The electronics industry is particularly well-suited to rapid growth in India because it is relatively labour intensive, requires high level engineering and scientific back-up which the country is generating and it has a large and growing domestic and export market. The programmes in electronics industry under the Departments of Electronics and Science and Technology are primarily related to completing and selectively expanding the existing activities of which the most significant is the units set up to manufacture large scale integrated circuits and ferrites for use in a variety of computer applications. With the completion of this programme, a significant advance in the production of critical materials and components required for the electronics industry is expected to be made. Provision has also been made for testing facilities and R&D support for the growth of the electronics industry.

12.58 The output targets indicated for the engineering industries will be examined more closely later.

12.59 *Fertilizers* : The main shift in emphasis in the fertilizer strategy for supporting the rapidly expanding agriculture programme is the much greater attention that will be devoted to the production and application of organic manures in improving the soil, minimising pollution and reducing costs of providing key nutrients. A substantial step-up in basic research and extension activity for production and application of organic manures is envisaged in the Plan.

12.60 Organic manures would, however, need to be supplemented with chemical fertilizers. The amount of chemical fertilizers being applied per hectare is currently so small that in many places diminishing returns are not expected to start for a long time to come. Expansion of capacity for production of chemical fertilizers will, therefore, be necessary.

12.61 The growth of the chemical fertilizer industry has been impressive, particularly during the last decade. Starting from a nitrogenous capacity of 85,000 tonnes in 1955-56, it expanded to 5.48 lakh tonnes in 1965-66 and to 30 lakh tonnes in 1977-78. The capacity for phosphatic fertilizers grew from 64,000 tonnes in 1955-56 to 2.28 lakh tonnes in 1965-66 and 9.15 lakh tonnes in 1977-78.

12.62 Notwithstanding the problems faced by some units in which capacity utilisation continues to be below satisfactory levels, there has been a significant increase in the production of fertilizers. However, the availability has almost continuously fallen short of the requirements and substantial imports have been necessary.

12.63 The consumption of nitrogenous and phosphatic fertilizers is estimated at 5.25 million tonnes and 1.6 million tonnes respectively for 1982-83 and at 7 million tonnes of nitrogen and 2.5 million tonnes of P_2O_5 in 1987-88. Considering the time-lag inherent in the establishment of new capacity, the attainable levels of production are estimated at 4.1 million tonnes of N and 1.125 million tonnes of P_2O_5 by 1982-83. Substantial imports would therefore, be necessary even at the end of the Plan period.

12.64 Advance action will need to be taken for setting up additional fertilizer capacity during the Plan period to meet the anticipated requirements during the period beyond 1982-83. Tentatively, it is envisaged that in addition to the projects under implementation, action will have to be initiated in a phased manner to take up the construction of 9 new nitrogenous fertilizer projects. Of this, provision has been made for 6 plants in the public sector; the remaining 3 plants are envisaged to be taken up in the cooperative/private sector. The capacity for phosphatic fertilizers will be based on a judicious combination of indigenous rock in Rajasthan and imported rock and phosphoric acid. Locational studies will be completed soon and followed by feasibility studies.

12.65 In order to maximise the output from existing units, there is a constant need to improve efficiency of operations. This is receiving attention. Captive power facilities are being created in some of the sensitive units to meet the critical power requirements. Steps have also been initiated to modernise and renovate the old plants and to remove the constraint in other units through suitable modifications.

12.66 The nitrogenous fertilizer plants in the country are based on a variety of feed-stocks such as natural gas, naphtha, fuel oil, coal electricity and coke-oven gas. In the light of the discovery of natural gas in the Bombay High and Bassein off-shore areas, the feed-stock policy has been recently reviewed. It has been decided that gas should be the preferred feed-stock for fertilizer production and consideration should

be given to the further use of coal as fertilizer feed-stock as soon as coal gasification technology in Talcher and Ramagundan plants is established as viable. The use of naphtha is to be limited to the extent that there is a long-term disposal problem at an inland location. For the present, other feed-stocks are not being encouraged.

12.67 *Pesticides* : Pesticides industry has assumed a vital role both for crop protection and health programme. The installed capacity for the technical grade pesticides is at present 50,456 tonnes per annum.

12.68. In the Central sector, Hindustan Insecticides Limited is engaged in the manufacture of a number of pesticides. Additionally, Hindustan Organic Chemicals, another public sector company, is also manufacturing BHC. In view of the importance attached to pesticides, provision has been made for taking up the manufacture of new pesticides by Hindustan Insecticides Limited. It is also proposed to set up joint sector ventures for formulations and/or basic materials with participation between the Central and the State sectors during the Plan. After taking these capacities into account, the overall demand for pesticides leaves a gap which is expected to be filled by the private sector.

12.69 *Petro-chemicals* : The major development in the petro-chemicals industry during the Fifth Plan has been the setting up of the petro-chemicals complex of the Indian Petro-chemicals Corporation Limited (IPCL), a public sector undertaking at Baroda. The naphtha cracker and the down stream units are expected to be commissioned during 1978. A beginning has also been made in setting up a petro-chemicals project in Assam through another public sector company, Bongaigaon Refinery and Petro-chemicals Ltd. (BRPL).

12.70 The discovery of crude oil and natural gas in the off-shore region on the Western Coast provides a new dimension to the possibility of petro-chemical expansion during the Plan period. Considering the capital intensive nature of petro-chemical projects, the pattern of production will, however, need to be carefully chosen to meet the priority uses. Based on cost benefit analysis, a detailed study, has, therefore, been carried out, of the advantages to the economy in the use of petro-chemical products in place of conventional materials without adversely affecting the established industries. Many such uses have been identified such as the use of plastic products in agriculture irrigation, health, communication and other priority areas ; use of synthetic fibres to supplement cotton to meet the growing clothing requirements of the population. The conversion of petro-chemical products into end consumer products is largely undertaken in the small-scale sector and thus has a significant employment potential. These considerations have been taken into account in formulating the investment programmes for the Plan.

12.71 Taking into account the gestation period for setting up new units in the petro-chemical industry, production from new starts is not likely to contribute to availability in a significant manner during the Plan period. Production targets envisaged for petro-chemicals are, therefore, primarily on the basis of schemes already under implementation. New starts have been viewed essentially in the context of meeting the requirements in the subsequent period.

12.72 An important consideration taken into account in postulating further expansion of the industry is the adoption of technologies and unit sizes that are cost effective to compare favourably with international prices. Consequently, the time phasing for the setting up of new capacities should take into account the possibilities of imports till sufficient gaps are created in the demand/supply picture to estabilsh economically viable units and also the possibilities of exports whenever the internal market is not able to absorb the total indigenous production.

12.73 Integrated operations can minimise investment costs and effectively utilise existing facilities. Such possibilities with relation to existing refineries and petro-chemical units in the public/private sector have been taken into account in formulating the programme. The necessary organisational arrangements involving, where possible and necessary, the establishment of joint sector ventures will need to be further examined.

12.74 Pending a further analysis in these directions, it is tentatively proposed to initiate steps to establish (a) an Olefins Complex using natural gas or naphtha as feed-stock based on techno-economic considerations, (b) an aromatics Plant for the recovery of benzene, toluene and xylenes, (c) a DMT/TPA plant with a capacity of 120,000 tonnes and (d) a polyester fibre project with a capacity of 45,000 tonnes. Furthermore, expansion of some of the activities in IPCL and Petrofils is contemplated.

12.75 The overall programme for petro-chemicals will leave substantial scope for the expansion of activities in the private sector also. The important areas in which such expansion would be necessary are PVC, Vinyl acetate, Phenol, and Phthalic anhydride.

12.76 The production of thermo-setting plastics like urea formaldehyde has remained stagnant. This is an industry which is particularly amenable to decentralised production through small-scale/medium entrepreneurs. A study on the possibility of harnessing the full potentialities in this direction will be undertaken, including the fuller utilisation of the existing capacity.

12.77 A provision of about Rs. 480 crores has been made for the programmes of petro-chemicals in the public sector for the Plan period.

12.78 *Drugs and Pharmaceuticals* : The drugs and pharmaceuticals industry has made considerable progress in the last two decades. The production in 1976-77 of bulk drugs is estimated at Rs. 150 crores and finished formulations at Rs. 700 crores. The contribution of the public sector amounted to 33 per cent of bulk drugs and 7 per cent of formulations, corresponding contribution of the organised sector was 60 per cent and 76 per cent respectively, with the balance representing the output of the small-scale sector. With this level of production, imports are still required to meet the requirements. The landed cost of drugs imported in 1976-77 is estimated at Rs. 82 crores.

12.79. Based on a review of requirement of essential bulk drugs and the health programme contemplated in the Plan, the overall requirement of bulk drugs and formulations is estimated at Rs. 550 crores and Rs. 1900 crores respectively in 1982-83. The production target envisaged for bulk drugs is Rs. 425 crores; imports at the level of Rs. 125 crores will be necessary in 1982-83.

12.80 Keeping in view the important role assigned to the public sector in the expansion of drug capacity. a provision of over Rs. 100 crores has been made for Hindustan Antibiotics Limited and Indian Drugs and Pharmaceuticals Limited for increasing the production of drugs and formulations. In addition, a provision of Rs. 5 crores has also been made for expansion of drug production in the public sector in Eastern Region.

12.81 *Cotton Textiles* : The overall requirements of textiles, covering cotton, blends and man-made fabrics are estimated at 12,200 million metres including exports of 1000-1200 million metres in 1982-83.

12.82 An important objective set out in the new Industrial Policy is to meet the clothing needs of the masses progressively through the development of the handloom sector which provides employment to the bulk of people engaged in the production of textiles. To this end, it is proposed that no expansion in the weaving capacity in the organised mill and powerloom sectors will be permitted.

12.83 The Programme of the textile industry for the Plan has been drawn up keeping these considerations in view. The main strategy proposed to be adopted is to encourage and support the production of cloth in the handloom sector to the maximum extent possible. The residual requirements would be met between the organised and the powerloom sectors, with preference, as between the two, to be accorded to the powerloom sector. In doing so, it is, however, envisaged that there will be no addition to the number of looms already installed and additional production in the organised and powerloom sectors would be achieved through better utilisation of existing capacity.

12.84 Current level of production in the handloom sector is estimated at about 2300 million metres. The average production per handloom is of the order of 2 to 2½ metres per day. It is proposed to step up the average utilisation to a significantly higher level of 4 to 4½ metres for a large proportion of these handlooms, which could be brought under the cooperative sector and through various other programmes of assistance to them. Further, it is also intended to extend handloom activity to other areas which do not figure in the handloom map at present but where traditional skills existed in the past. Taking into account the organisational and technological problems involved in reaching the millions of handloom weavers spread in different parts of the country, it is the considered view that the maximum level of production that can be attained in the handloom sector within the next five years would be around 3700 million metres. This is not, however, regarded as a ceiling. It is intended to review the position after a year or so and in the light of experience to revise it upwards to the extent possible.

12.85. The balance quantity of 8500 million metres is tentatively proposed to be allocated for production in the organised and powerloom sectors. The current level of production is of the order of 7100 million metres ; 4200 million metres in the mill sector and 2900 million metres in the powerloom sector. Tentatively, it is envisaged that the production in the organised sector be placed at 4600 million metres and in the powerloom sector at 3900 million metres. As there is considerable unutilised capacity, this level of production can be achieved without any addition to the number of looms. To the extent, production can be stepped up in the handloom as a result of the subsequent review, the output in other sectors could be proportionately brought down. The allocation as between mills and powerlooms, within the existing capacity, is notional in the sense that the actual production will be conditioned by market trends and could vary within limits.

12.86 The main policies with respect to ensuring the envisaged expansion in the handloom sector are :

(a) stricter enforcement of reservation of items earmarked exclusively for the handloom sector (such reserved items would be reviewed from time to time and expanded).

(b) shift in the pattern of production in the powerloom sector to those varieties which compete with the mill sector rather than the handloom sector. This is proposed to be achieved through positive programmes for assisting the powerloom sector in the production of varieties which are currently being manufactured in the mill sector,

(c) appropriate fiscal adjustments to improve the competitiveness of the handloom sector *vis-a-vis* the mills and the powerloom sector.

12.87 An important programme contemplated in the handloom sector is the up-gradation of the quality of the fabrics to increase the unit value and to provide processing facilities. This is expected to increase the earnings of the handloom weavers. Steps would also be taken to enlarge the marketing facilities for the handloom cloth. A substantial share of the common cloth production is also proposed to be allocated to the handloom sector. The detailed programme for supporting the handloom sector have been dealt with in the Chapter on Village & Small Industries.

12.88 While addition of loom capacity will not be permitted in the mill sector, selective modernisation would be permitted, particularly for maintaining exports. Modernisation through installation of automatic looms will be considered only on the basis of export obligations. Addition of looms exclusively for the purpose of exports will also be considered. Decentralisation of existing loom capacity from metropolitan towns will also be encouraged.

12.89 To meet the additional requirements of yarn, substantial expansion of the spinning capacity in the organised sector will be taken up. Preference would be given to expansion of spinning capacity to bring the existing units to economic levels. Arrangements will be made to preferentially meet the requirements of yarn for the handloom sector. Besides, arrangements for distributing yarn to the handloom sector will be strengthened to reduce the dependence on the middleman.

12.90 The overall cotton requirements, including extra factory consumption/exports are estimated at 92.5 lakh bales in 1982-83. Intensive efforts will be made to step up domestic production to meet the requirements as fully as possible from within the country.

12.91 After taking into account the requirements of cotton, the balance requirements of fibres for the targeted level of textile production will need to be met through the utilisation of man-made fibres. The quantity required for this purpose, excluding the consumption in woollen textiles, is estimated at 2,60,000 tonnes. This represents a moderate shift in the inter-fibre composition in favour of man-made fibres.

12.92 Given the overall levels of consumption of man-made fibres, the maintenance of reasonable quality of fabrics and the protection of consumer interests set limitations on the maximum quantity of cellulosics that could be utilised. A larger proportion of synthetic fibres will, therefore, have to find application in the textile industry. Rationalisation of inter-fibre prices through suitable measures will be necessary to make larger use of man-made fibres in the production of textiles.

12.93 The organised cotton textiles industry is an important segment of the total textile industry. Besides being one of the largest employers of labour, it has also a significant role as an earner of foreign exchange. This industry has been passing through difficult conditions over the last few years. Barring 1973 which happened to be a fairly good year, cotton textile mills have been uniformly faring badly in all these years.

12.94 The controlled cloth scheme has been considered as a contributory factor to the prevalent sickness in this sector. In the context of a situation of genearally increasing raw material costs and steadily falling productivity on account of lack of modernisation, the controlled cloth scheme accentuated the disparity between cost and price, especially when the consumer prices of controlled cloth have been revised upwards only once since 1974. The position has been aggravated in the last year consequent to a very steep increase in cotton prices, a study of the economics of the production of controlled cloth shows that the cost of cotton alone is higher than the stamped prices in many of the varieties. Even after taking into account 35 per cent increase granted to mills on 1st January, 1977 (not translated into the form of an increased consumer price), the uncovered cost of production has been found to be sizeable.

12.95 It has been recognised that in any scheme of procurement and distribution of essential commodities, the return to the producer should be fair and equitable. Recognising the fact that a scheme for making available the essential commodities like cloth at reasonable prices to the consumer should be devised in such a fashion as to subserve both the interests of the consuming public and the manufacturing industry, a new shape to the scheme for the manufacture of controlled cloth is under consideration. Studies on distribution of controlled cloth have revealed that it requires considerable streamlining. For instance, the demand for controlled cloth in the Eastern Region was in excess of supply, whereas, in the Western Region there were surplus stocks. Greater attention needs to be paid in tailoring the product mix to the demand pattern. The question is also being considered as to what other steps can be taken to increase production of qualities and constructions of cloth required by the economically weaker sections of the society.

12.96 With a view to strenthening the base, certain concomitant steps are being considered to improve the position of raw material availability and prices. The proposals include the introduction of some order of stability in raw material (cotton) prices by ensuring that the cotton prices move within a reasonable spectrum so as to subserve both the interest of the grower and the consumer of textiles. This might necessitate buffer stock operations, for which the Cotton Corporation of India would have to be strengthened.

12.97 The main investment in the public sector is for the rehabilitation and modernisation of the mills under the National Textile Corporation. A provision of Rs. 100 crores has been made for N. T. C.

12.98 *Jute Textiles*: With about 43,000 looms installed in 74 units, the industry accounted for about 32 per cent of world production and about 46 per cent of world export of jute goods in 1974. The total capital employed in the industry is of the order of Rs. 300 crores approximately, generating employment to some 2.5 lakh workers. Moreover, cultivation of jute provides a living to nearly 40 lakh families. Over and above these, marketing of jute and jute products goes to employ a sizeable number of people

12.99 The present licensed capacity of the industry is 21 lakh tonnes per annum. In addition, the Government have recently approved the establishment of three new jute mills—one each in Assam, Orissa and Tripura with a total production capacity of little over 40,000 tonnes per annum mainly for catering to the internal market. Although the existing jute mills can produce about 21 lakh tonnes a year on the basis of installed looms on triple shift functioning, the main limitating factors which have stood in the way of full utilisation of loom capacity are short fall in the spinning capacity and other back processing. On the basis of available spinning capacity, a maximum of around 1.10 lakh tonnes per month on an average or little over 13 lakh tonnes per year can be produced. It has, however, not been possible to utilise in full the effective annual production

capacity due mainly to major constraints of which, one is the uncertain availability of raw jute, and the other is the fluctuating demand for jute goods both at home and abroad.

12.100 Production of jute goods during 1977 at 11.84 lakh tonnes, was marginally lower by 0.6 per cent compared with that of 1976. While production was maintained at a higher level during the first half of the year it went down during the second half mainly on account of some shortage in supply of raw jute. Production of 'hessian', 'carpet backing' and 'other' goods increased substantially as compared with that of 1976 due mainly to increased export demand. Production of 'Sacking', however, registered a decline by about 13 per cent on account of a fall in demand within the country.

12.101 While the problem of the availability of raw jute and its distribution to the various mills would be taken care of in the immediate future, the question of having a long term policy on jute is under-consideration so that the interest of jute growers as well as consumers and the viability of the jute industry and its workers are all adequately taken care of. The role to be assigned to the Jute Corporation is being considered a new.

12.102 The estimates of export and internal consumption taken together will add to a total of 14 lakh tonnes in 1982-83. In view of the already large underutilised capacity, there is little scope for further expansion. To avoid accentuating the difficulties faced by the jute industry from time to time, it may be necessary also to regulate the further expansion of synthetic substitutes except of those materials where jute packings cannot serve the purpose and the use of synthetic substitutes is considered absolutely necessary. In the meantime, there is an urgent need to intensify R&D in the both the gunny processing and diversification of the product mix including mixed fibres, so that this industry can develop a better and wider range of products and be less vulnerable to the competition from synthetics, both in the home and export market.

12.103 *Paper and Newsprint* : On the basis of the additional requirements on account of an accelerated programme of adult education, the demand for paper and paper board is expected to rise to 1.425 million tonnes in 1982-83. Capacity and production targets envisaged are 1.65 and 1.25 million tonnes respectively. Marginal imports, therefore, may be necessary.

12.104 The demand for newsprint is estimated at 2,70,000 tonnes in 1982-83. With the commissioning of the newsprint project in Kerala, capacity of the industry would reach 1,55,000 tonnes. A production target of 1,20,000 tonnes is envisaged for 1982-83.

12.105 The raw material for the paper industry is required to be planned on a more rational, systematic and long term basis taking into account the limited forest resources of the country and the long gestation period needed for their regeneration. A policy to maximise the use of potential non-conventional raw materials for production of paper is being formulated. This has assumed importance in the context of a number of new small plants being set up based on agricultural residues and the emerging shortages of conventional raw materials to support a growing paper industry. The possibility of establishing large pulp mills to provide long fibred pulp to small paper mills to upgrade the quality of their output will need consideration. Given the country's limited availability of the required long fibred timbers and the options available for making the optimal use of them, the establishment of additional capacity for newsprint may not be justified. In this background, the provision made in the public sector is limited to funds required for the countinuing programmes and for a start for setting up a new pulp/paper project.

12.106 *Cement* : The demand for cement has been estimated at 31 million tonnes in 1982-83. The production target envisaged is 30 million tonnes. Marginal imports may therefore be necessary. Apart from completing the projects already taken up by the Cement Corporation of India, it is proposed to establish a capacity of about 2 million tonnes of slag cement based on additional slag available from the steel plants. Altogether about 8 million tonnes are expected to be produced in the Central/State sector. The rest viz., 22 million tonnes is expected to be produced by the private sector. One of the main reasons for sluggish growth of the industry has been the unremunerative low levels of retention prices fixed for the Cement Industry. The pricing policy recently announced by the Government is expected to provide stimulus for a substantial expansion of capacity in the private sector. There are also significant possibilities of increased production through adoption of technological improvements like pre-calcination. The technoeconomic feasibility of setting up mini-cement plants, particularly in locations, otherwise removed from production centres of cement, is also under consideration. The question of split location of plants is also being examined.

12.107 A detailed study for stimulating the growth of the cement industry embracing *inter alia* policies on prices, technology, location, distribution and freight pool is being undertaken. This study is expected to provide the frame work for the formulation of appropriate policies for the orderly growth of the industry..

12.108 *Sugar* : As the world's largest producer of sugarcane, the country has considerable potential for the development of the sugar industry. The rapid growth of the co-operative sugar factories in some parts of the country, in recent years, illustrates the potential for the development of this industry when the interests of the farmers and those of the manufacturers of sugar can be reconciled. For various reasons, the traditional pattern of location of sugar factories has undergone a change in the last decade or two and in certain parts of the country a number of sugar factories have run into serious financial difficulties. Many of the closed units have had to be taken over by the State Governments and have continued to be a financial burden even after the take-over. The viability of sugar production depends primarily on a proper relationship being maintained between the realisation from the sale of sugar and the cost of sugarcane. The sugarcane cultivator, of course, has to be given a fair

share of the realisation from the sale of sugar. However any artificial arrangement by which the price of sugar-cane is out of line with its utility as a raw material, or is excessive in relation to the sales realisation from sugar, can only work to the detriment of the viability of the industry and the interests of the farmer. A rational pricing of sugarcane which is consistent with the pricing policy for sugar and which provides for assured supply of cane, is a pre-condition for the long-term viability of the industry. Evolving such a policy will be given urgent attention.

12.109 The domestic requirements are estimated at 5.7 million tonnes in 1982-83. The level of exports will be predicated by the international supply and prices. An export level of 0.5 million tonnes is tentatively projected. As there is a degree of flexibility in restraining domestic consumption in the event of a favourable climate for exports, it should be possible to achieve even a higher level of exports within the production target of 6.2 million tonnes.

12.110 There has recently been some attempt to evolve the technology for putting up mini-sugar plants. The alternative technologies available for the production of sugar consistent with desirable capital-employment parameters show that future demand for sweetening agents, after allowing for fuller utilisation of the existing and licensed sugar mills can be met by necessary expansion through OPS Khandsari plants. It is proposed to work out the policy frame-work for the further expansion of the sugar industry in the light of these studies. For the time being, therefore, no new sugar mills will be licensed, although expansions of existing units may not be ruled out where this is necessary for maintaining their viability.

12.111 *Industrial and mineral programme relating to Atomic Energy* : The major programmes in this field are the completion of existing schemes, selective expansions in certain directions and the establishment of a heavy water project. Additionally, it is also envisaged to set up a rutile plant in Orissa. A provision of Rs. 294 crores has been made for these programmes.

12.112 Based on the targets of production, the average rate of industrial growth is expected to be 7 per cent per annum during the Plan period. The investment projected will bring about a better balance in the industrial structure and will contribute significantly to employment generation.

ANNEXURE I

Capacity and Production Targets for selected Industries for 1982-83

Sl. No.	Industry	Unit	1977-78		1982-83	
			Capacity	Estimated Production	Target Capacity	Target Production
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1.	Mining					
	(i) Coal	Mill tonnes		103.20		149.00
	(ii) Lignite	,,		3.70		8.80
	(iii) Petroleum (Crude)	,,		10.77		18.00
	(iv) Iron Ore	,,	54.00	43.00	72.00	65.00
2.	Basic Metals					
	(i) Hot Metal	,,	12.24	10.00	14.24	14.00
	(ii) Steel Ingots	,,	13.30	9.70	17.60	15.00
	(iii) Saleable Mild Steel	,,	10.25	7.73	13.62	11.80
	(iv) Pig Iron for Sale	,,	2.46	1.72	2.06	2.15
	(v) Alloy and Special Steel	'000 tonnes	675	542	900	840
	(vi) Aluminium	,,	275	180	350	300
	(vii) Copper	,,	47.50	23.00	47.50	40.00
	(viii) Zinc	,,	95	43	95	75
	(ix) Lead	,,	8	8	18	15
3.	Metal Products					
	(i) Steel Castings	,,	170	70	200	110
	(ii) Steel Forgings	,,	204	102	230	150
4.	Non-Metallic Mineral Products					
	(i) Cement	Mill. tonnes	21.87	19.20	35.00	30.00
	(ii) Refractories	'000 tonnes	1500	800	1700	1100
5.	Petroleum Products	Mill. tonnes	27.45	22.32	37.45	33.15
6.	Basic Chemicals					
	(i) Sulphuric Acid	'000 tonnes	2640	1900	3790	2910
	(ii) Caustic Soda	,,	704	530	970	800
	(iii) Soda Ash	,,	618	570	970	800
	(iv) Methanol	,,	44.50	40.00	104.00	85.00
	(v) Industrial Oxygen	M.Cu. Metres	118	74	175	130
7.	Agricultural Chemicals					
	(i) Fertilizers (N)	'000 tonnes	3028	2060	6111	4100
	(ii) Fertilizers (P_2O_5)	,,	915	660	1426	1125
	(iii) Pesticides (Tech. Materials)	,,	50	39	80	65
	(iv) BHC	,,	28.90	26.00	50.00	47.00
	(v) DDT	,,	4.20	4.50	9.20	9.00
8.	Thermo Plastics and Synthetic Rubbers					
	(i) L.D. Polyethylene	,,	33	24	113	99
	(ii) H D. Polyethylene	,,	30	24	30	30
	(iii) Polyvinylchloride	,,	65	55	133	97
	(iv) Polystyrene	,,	17.50	14.00	24.00	20.00
	(v) Polypropylene	,,	—	—	30	27
	(vi) Synthetic Rubbers	,,	30	28	50	50
9.	Synthetic Fibres and Intermediates					
	(i) D.M.T.	,,	24	26	65	48
	(ii) Caprolactam	,,	20	17	20	18
	(iii) Vis cose Filament Yarn	,,	43	41	50	50
	(iv) Viscose Staple Fibre	,,	89	85	130	120

(0)	(1)		(2)	(3)	(4)	(5)	(6)
	(v) Viscose Tyre Cord		'000 tonnes	21.00	15.70	23.00	21.00
	(vi) Nylon Filament Yarn		,,	18.00	18.00	28.00	25.00
	(vii) Nylon Tyre cord and other industrial yarn		,,	7.90	6.20	9.90	9.00
	(viii) Polyester Staple Fibre		,,	25.00	22.20	77.00	60.00
	(ix) Polyester Filament Yarn		,,	3.00	2.80	8.00	6.00
10.	Drugs and Pharmaceuticals						
	(i) Bulk Drugs		Rs. cores		175.00		425.00
	(ii) Formulations		,,		830.00		1900.00
11.	Food Products						
	(i) Sugar		Mill. tonnes	5.20	5.20	7.00	6.20
	(ii) Vanaspati		'000 tonnes	1283	600	1283	780
12.	Textiles						
	(i) Cotton Yarn	Cap.	Mill. Spindles	19.80	960	21.00	1220
	(ii) Cloth (Mill Sector)	Cap.	Prod. Mill Kgs. lakh looms	2.08	4200	2.08	4600
	(iii) Cloth (Decentralised sector)		Prod. Mill Metres				
	Handloom		,,		5200		3700
	Powerloom						3900
	(iv) Jute Manufactures'		'000 tonnes	1400	1180	1400	1400
13.	Paper and Paper Products						
	(i) Paper and Paper Boards		,,	1137	900	1650	1250
	(ii) Newsprint		,,	75	58	155	120
14.	Leather and Rubber Goods						
	(i) Leather Footwear (Organised sector)		Mill. Pairs	23.00	14.00	23.00	20.00
	(ii) Rubber Footwear (Organised sector)		,,	57.25	43.10	57.25	50.00
	(iii) Bicycle tyres (organised sector)		Mill. Nos.	32.40	28.00	32.40	32.00
	(iv) Automobile tyres		,,	7.93	6.20	11.07	9.20
15.	Other Consumer Products						
	(i) Soap (organised sector)		'000 tonnes	233	290	285	350
	(ii) Synthetic Detergents (Organised sector)		,,	210	104	300	200
16.	Industrial Machinery						
	(i) Machine Tools		Rs. cores	153	100	200	160
	(ii) Mining machinery (including coal machinery)		,,	42	16	42	30
	(iii) Metallurgical machinery		,,	..	55	..	70
	(iv) Cement machinery		,,	..	18	..	34
	(v) Chemical and Pharmaceutical machinery		,,	84	65	150	100
	(vi) Sugar machinery		,,	..	50	..	80
	(vii) Rubber machinery		,,	14	7	20	14
	(viii) Paper & Pulp machinery		,,	35.70	13.50	45.00	30.00
	(ix) Cotton Textile machinery incl. accessories		,,	213	130	230	190
	(x) Printing machinery		,,	7	3	12.60	10
	(xi) Boilers (Power and Industrial)		,,	..	170	..	240
17.	Electric Power Equipment						
	(i) Steam Turbines		Mill. KW	2.70	1.52	3.50	3.44
	(ii) Hydro Turbines		,,	1.40	1.11	1.80	1.34
	(iii) Transformers		Mill KVA	22.20	18.00	40.00	35.00
	(iv) Motors		Mill BHP	6.60	4.00	8.00	7.00
18.	Construction Machinery						
	(i) Crawler tractors		Nos.	650	300	650	520
	(ii) Dumper & Scrapers		,,	790	300	790	450
	iii) Road Rollers		,,	1800	500	1800	1000
19.	Agricultural Machinery						
	Tractors		'000 Nos.	52	36	60	45

(0)	(1)	(2)	(3)	(4)	(5)	(6)
20.	Rail and Water Transport					
	(i) Diesel Locomotives	Nos.	150	142	190	180
	(ii) Electric Locomotives	,,	80	59	80	66
	(iii) Railway Coaches	,,	1500	1000	1500	1350
	(iv) Railway Wagons	'000 Nos.	22.50	12.00	22.50	17.00
	(v) Ship Building	'000 GRT	80.00	66.40	238.00	238.00
21.	Road Transport					
	(i) Commercial Vehicles	'000 Nos.	73	40	73	65
	(ii) Passenger Cars	,,	48.40	40.00	51.40	48.40
	(iii) Jeeps	,,	13	9	18	15
	(iv) Scooters, Motor Cycles and Mopeds	,,	450	290	500	425
	(v) Bicycles (organised sector)	Mill Nos.	3.7	2.9	4.5	3.7
22.	Mechanical Components and consumer durables					
	(i) Ball and Roller Bearings	Mills. Nos.	39.00	30.50	55.00	50.00
	(ii) Typewriters	'000 Nos.	90.80	62.00	100.00	75.00
	(iii) Sewing Machines (organised sector)	,,	530	390	530	431
23.	Electrical Components and Consumer durables					
	(i) Conductors (ACSR & AA)	'000 tonnes	113.10	70.00	150.00	140.00
	(ii) Cables (PVC & VIR)	Mill. Core Mts.	1281	470	1281	1000
	(iii) Dry Cells	Mill Nos.	1291	620	1291	830
	(iv) Storage Batteries	'000 Nos.	2460	1500	2460	2085
	(v) GLS Lamps	Mill. Nos.	200[1]	170	250.00	230.00
	(vi) Fluorescent Tubes	,,	23.45[1]	18.00	31.00	28.00
	(vii) Electric Fans	,,	2.99	2.70	6.00	5.00
24.	Electronics (Excluding Telecommunications)					
	(i) Consumer Electronics	Rs. crores	196.5	170.0	414.0	350.0
	(ii) Medical Electronics	,,	12.0	6.0	22.5	14.0
	(iii) Instruments	,,	45.0	32.0	108.0	90.0
	(iv) Computers & Calculators	,,	32.0	28.0	113.0	90.0
	(v) Controlled Industrial Electronics	,,	35.0	30.0	70.0	63.0
	(vi) Components	,,	183.0	92.0	255.0	188.0
	(vii) Materials	,,	38.0	22.0	85.0	70.0
	(viii) Elementary and two-way communication	,,	11.5	8.5	12.0	11.0

[1]Including 25 per cent excess licensed capacity.

ANNEXURE II

Outlays on Industrial and Mineral Programmes in the Central Sector

(Rs. crores)

Ministry/Department	Five Year Plan (1978-83) Outlay				
	Continuing Schemes	Renewals and Re-placements	Science and Technology	New Schemes	Total
(1)	(2)	(3)	(4)	(5)	(6)
1. Ministry of Steel & Mines					
I. Department of Steel	2004.12	475.00[1]	17.87	579.55	3076.54
II. Department of Mines	289.83	65.00	18.00	191.00	563.83
2. Ministry of Energy (Department of Coal)[2]	874.00	..	18.00	958.00	1850.00
3. Ministry of Petroleum, Chemicals and Fertilizers					
I. Deptt. of Chemicals & Fertilizers					
a. Fertilizers	450.51	53.00	10.00	1058.00	1571.51
b. Chemicals	75.57	25.68	6.08	84.00	191.33
II. Deptt. of Petroleum					
a. Petroleum[2]	2312.73	..	22.63	214.64	2550.00
b. Petro-chemicals	233.12	22.00	12.73	213.00	480.85
4. Ministry of Industry					
I. Deptt. of Industrial Development	507.39	6.00	16.77	146.05	676.21
II. Deptt. of Heavy Industry	75.00	131.00	50.50	341.00	597.50
5. Department of Atomic Energy	132.00	..	..	162.00	294.00
6. Deptt. of Electronics	48.00	..	30.00	0.80	78.80
7. Ministry of Shipping & Transport	25.47	..	12.14	71.75	109.36
8. Ministry of Commerce, Civil Supplies & Cooperation					
I. Department of Commerce					
a. Industries Sector	7.00	..	..	..	7.00
b. Plantation	90.00	..	..	..	90.00
II. Deptt. of Civil Supplies and Cooperation					
a. Civil Supplies	5.00	..	..	..	5.00
b. Cooperation	4.70	..	..	73.30	78.00
9. Department of Science & Technology	2.85	..	..	..	2.85
10. Ministry of Finance					
I. Deptt of Revenue	0.18	..	..	11.80	11.98
II. Deptt. of Economic Affairs	15.48	..	..	14.23	29.71
III. Banking Wing	200.00	..	..	..	200.00
TOTAL	**7352.95**	**777.68**	**214.72**	**4119.12**	**12464.47**

[1]Includes provision for township.

[2]Details are given in Energy Chapter.

ANNEXURE II-A

Central Industrial and Mineral Programmes

(Rs. in crores)

Sl. No.	Organisation/Project	Five Year Plan 1978-83 Outlay
(0)	(1)	(2)
	Ministry of Steel & Mines	
1.	(Department of Steel)	**3076.54**
	A. Steel	**2548.05**
1.1.	Bhilai Steel Plant	**830.45**
1.1.1	Continuing Schemes	**730.45**
1.1.1.1	4 m.t. expansion	700.00
1.1.1.2	Other schemes—Dalli Mech. Mines, Second sintering Plant, Refractory Plant etc.	30.45
1.1.2	Additions, Modifications replacements technological innovations, townships etc.	**100.00**
1.2	Durgapur Steel Plant	**100.00**
1.2.1	Additions/Modifications, replacements technological innovations, townships etc.	100.0
1.3	Rourkela Steel Plant	**234.12**
1.3.1	Continuing Schemes	**50.27**
1.3.1.1	Addl. Naphtha reformer, modernisation of hot strip mill, second MSDS, Med. pressure boiler plant etc.	50.27
1.3.2	Additions, Modifications, replacements technological innovations, township etc.	**75.00**
1.3.3	New Schemes (CRGO Plant)	**108.85**
1.4	Bokaro Steel Ltd.	**622.16**
1.4.1	Continuing Schemes	**562.16**
1.4.1.1	1.7 m.t. stage	25.11
1.4.1.2	4 m.t. stage	530.00
1.4.1.3	Slag granulation Plant	7.05
1.4.2	Additions, Modifications, replacements technological innovations, townships etc.	10.00
1.4.3	New Schemes (4.75 m.t. stage)	**50.00**
1.5	Indian Iron and Steel Co. (IISCO)	**184.75**
1.5.1	Continuing Schemes	**44.75**
1.5.1.1	Plant rehabilitation schemes	9.30
1.5.1.2	10th Coke oven Battery	24.50
1.5.1.3	Chasnala Open Cast Mine	5.70
1.5.1.4	Ramnagore Open Cast Mine	3.75
1.5.1.5	Double flanged screwed pipes	1.50
1.5.2	Additions, Modifications, replacements technological innovations, townships etc.	140.00
1.6	Alloy Steel Plant, Durgapur	**27.95**
1.6.1	Continuing Schemes	**7.95**
1.6.1.1	Additional melting facilities	7.95
1.6.2	Additions, Modifications, replacements technological innovations, townships etc.	**20.00**
1.7.	VISL, Bhadravati	**16.35**
1.7.1	Continuing Schemes	1.35
1.7.1.1	Forge Plant	**1.35**
1.7.2	Additions, Modifications, replacements technological innovations, townships etc.	**15.00**
1.8	Salem Steel Plant (Stage I Continuing Schemes)	**108.70**
1.9	Science and Technology	**17.87**
1.10	Sponge Iron India Ltd. (New Schemes)	**5.70**
1.11	New Schemes under the Department	**400.00**
1.11.1	New Steel Plants	200.00
1.11.2	Cement Plants	50.00
1.11.3	Captive Power Plants	100.00
1.11.4	Others—New Schemes at DSP, ASP, VISL, R & D, Refractory, Plants and Misc.provision for HSCL, MECON, SAIL, MOIL, IOB etc.	50.00
	B. Iron Ore	**528.49**
1.12	N.M.D.C.	**72.49**
1.12.1	Continuing Schemes	**42.49**

(0)	(1)	(2)
1.12.1.1	Kiriburu Expn.	1.01
1.12.1.2	Bailadila—5	3.15
1.12.1.3	Donimalai	3.32
1.12.1.4	Meghahatuburu	34.37
1.12.1.5	DPR/Feasibility studies	0.64
1.12.2	Renewals and Replacements	**15.00**
1.12.3	New Schemes	**15.00**
1.12.3.1	Pellet Plant	1.00
1.12.3.2	Investigations	
	(i) Bababudan Phase II	
	(ii) West Coast, Chiria etc.	4.00
1.12.3.3	Others—Reclamation of fine ore, fine ore handling plan	
1.12.3.4	New Mine—Bailadila	1.00
1.12.3.5	New Mine Chiria	1.00
1.12.3.6	Bailadila Deposits—11c	8.00
1.13	Kudremukh Iron Ore Co. Ltd. (Continuing Scheme)	**456.00**
2.	(DEPARTMENT OF MINES)	**563.83**
2.1	Bharat Aluminium Co.	**220.28**
2.1.1	Continuing Schemes	55.28
2.1.2	Replacements & Renewals	15.00
2.1.3.	New Schemes	150.00
2.2	Hindustan Copper Ltd.	**111.48**
2.2.1	Continuing Schemes	61.48
2.2.2	Replacements & Renewals	30.00
2.2.3	New Schemes	20.00
2.3	Hindustan Zinc Ltd.	**84.57**
2.3.1	Continuing Schemes	49.57
2.3.2	Replacements & Renewals	20.00
2.3.3	New Schemes	15.00
2.4	Nickel Project (New Schemes)	**1.00**
2.5	Bharat Gold Mines Ltd.	**10.00**
2.5.1	Continuing Schemes	5.00
2.5.2	New Schemes	5.00
2.6	Mineral Exploration Corporation of India Ltd.—Continuing Schemes	**45.00**
2.7	Geological Survey of India—Continuing Schemes	70.00
2.8	Indian Bureau of Mines—Continuing Schemes	**3.50**
2.9	S & T	**18.00**
	Ministry of Petroleum, Chemicals & Fertilizers	
3	Department of Chemicals and Fertilizers	**1762.84**
3.1	Fertilizer Corporation of India/	**165.69**
3.1.1	Continuing Schemes	80.69
3.1.1.1	Ramagundam	38.79
3.1.1.2	Talcher	41.90
3.1.2	New Schemes (Korba)	85.00
3.2	Rashtriya Chemicals & Fertilizers/	**628.00**
3.2.1	Continuing Schemes (Trombay V)	142.00
3.2.2	New Schemes (West Coast Fertilisers I & II)	486.00
3.3	Hindustan Fertilizers Corporation/	**230.61**
3.3.1	Continuing Schemes (Haldia)	50.61
3.3.2	New Schemes (Namrup III)	180.00
3.4	Fertilizers & Chemicals, Travancore/	40.26
3.4.1	Continuing Schemes	20.26
3.4.2	New Schemes (Diversification)	20.00
3.5	National Fertilizers/	**33.52**
3.5.1	Continuing Schemes	33.52
3.5.1.1	Bhatinda	7.52
3.5.1.2	Panipat	26.00
3.6	Pyrites Phosphates and Chemicals	**8.00**
3.6.1	Continuing Schemes	6.00
3.6.2	New Schemes	2.00
3.7	Hindustan Insecticides	**38.96**
3.7.1	Continuing Schemes	15.73
3.7.2	Renewals & Replacements	6.23

[1]Covered also under item Nos. 3.11.1 & 3.11.2

(0)	(1)	(2)
3.7.3	R & D	2.00
3.7.4	New Schemes	15.00
3.8	Hindustan Organic Chemicals	**45.79**
3.8.1	Continuing Schemes	15.46
3.8.2	Renewals & Replacements	5.95
3.8.3	R & D	0.38
3.8.4	New Schemes	24.00
3.9	Hindustan Antibiotics	**34.09**
3.9.1	Continuing Schemes	9.59
3.9.2	Renewals & Replacements	2.50
3.9.3	R & D	2.00
3.9.4	New Schemes	20.00
3.10	Indian Drugs & Pharmaceuticals	**67.49**
3.10.1	Continuing Schemes	34.79
3.10.2	Renewals & Replacements	11.00
3.10.3	R & D	1.70
3.10.4	New Schemes	20.00
3.11	Other Schemes under the Department of Chemicals & Fertilizers	**470.43**
3.11.1	Continuing Schemes (FCI, HFC, RCFL)	**117.43**
3.11.2	Renewals & Replacements (Fertilizers)	53.00
3.11.3	New Schemes	**300.00**
3.11.3.1	Additional Nitrogenous Fertilizer Plant I	150.00
3.11.3.2	Additional Nitrogenous Fertilizer Plant II	25.00
3.11.3.3	New Phosphatic Fertilizer Plants	100.00
3.11.3.4	P O I P Schemes	10.00
3.11.3.5	East India Drugs Plant	5.00
3.11.4	Science & Technology Programmes	10.00
4.	Department of Petroleum (Petrochemicals)	**480.85**
4.1	Indian Petrochemicals Corporation Ltd.	**141.86**
4.1.1	Continuing Schemes	110.06
4.1.1.1	Olefins Complex	45.92
4.1.1.2	DMT Expansion	5.52
4.1.1.3	Polyvinyl Chloride	45.02
4.1.1.4	Acrylates	13.60
4.1.2	Renewals & Replacements	20.00
4.1.3	R & D	11.80
4.2	Bongaigaon Refinery & Petrochemicals (Continuing Scheme)	109.00
4.3	Petrofils Cooperative Ltd.	**1.53**
4.3.1	Continuing Schemes (Polyester filament yarn Project)	1.53
4.4	Indo Burmah Petroleum Co.	**25.42**
4.4.1	Continuing Schemes	12.49
4.4.2	Renewals & Replacements	2.00
4.4.3	R & D	0.93
4.4.4	New Schemes	10.00
4.5	CIPET (Continuing Schemes)	**0.04**
4.6	New Schemes under the Department	**203.00**
4.6.1	Gas/Naphtha cracker and down stream facilities	100.00
4.6.2	Aromatics Complex	40.00
4.6.3	New D.M.T./T.P.A. Plant	40.00
4.6.4	New Polyester Fibre Plant	10.00
4.6.5	Polypropylene & Linear Alkyl Benzene (Based on FCC)	10.00
4.6.6	Polyester filament yarn	3.00
5.	Department of Industrial Development	**676.21**
5.1	Cement Corporation of India	129.49
5.1.1	Continuing Schemes	50.94
5.1.2	New Schemes.	78.55
5.1.2.1	Adilabad	28.73

(0)	(1)	(2)
5.1.2.2	Tandur	29.82
5.1.2.3	Others	20.00[1]
5.2	Hindustán Paper Corporation	**359.90**
5.2.1	Continuing Schemes	**312.65**
5.2.1.1	Nagaland Paper Project	23.96
5.2.1.2.	Nowgong Paper Project	110.50
5.2.1.3	Cachar Paper Project	112.58
5.2.1.4	Mandya Nationl Paper Mills (Purchase consideration and limited expansion)	1.95
5.2.1.5	Kerala Newsprint	63.66
5.2.2	Science & Technology	**2.25**
5.2.3	New Schemes	**45.00**
5.2.3.1	New Pulp Paper Project	40.00
5.2.3.2	Other schemes	5.00
5.3	National Newsprint and Paper Mills (Continuing Schemes)	**5.87**
5.4	National Textile Corporation (Continuing Schemes)	**100.00**
5.5	Bharat Ophthalmic Glass (New Schemes)	**2.00**
5.6	Tannery and Footwear Corporation (New Schemes)	**4.50**
5.7	Hindustan Photo Films	**7.00**
5.7.1	Continuing Schemes	2.50
5.7.2	Renewals and Replacements	2.00
5.7.3	Science & Technology	0.50
5.7.4	New Schemes.	2.00
5.8	Artificial Limb Mfg. Co.	**3.00**
5.8.1	Continuing Schemes	0.48
5.8.2	Science & Technology	2.52
5.9	Hindustan Salts	**3.50**
5.9.1	Continuing Schemes	2.50
5.9.2	New Schemes.	1.00
5.10	National Productivity Council (Continuing Schemes)	**1.25**
5.11	National Institute of Design (Continuing Schemes)	0.20
5.12	Patent Information Service (Con tinuing Schemes)	**1.00**
5.13	Bharat Leather Corporation (New Schemes)	**10.00**
5.14	Subsidy to backward areas	**25.00**
5.15	Instrumentation	**5.00**
5.15.1	Continuing Schemes	3.50
5.15.2	Science & Technology	0.50
5.15.3	New Schemes.	1.00
5.16	National Instruments	**2.50**
5.16.1	Continuing Schemes	1.00
5.16.2	Science & Technology	0.50
5.16.3	New Schemes.	1.00
5.17	Hindustan Cables	**6.00**
5.17.1	Continuing Schemes	0.50
5.17.2	Renewals & Replcements	4.00
5.17.3	Science & Technology	0.50
5.17.4	New Schemes.	1.00
5.18	Science & Technology—(Other schemes)	**10.00**
6.	Department of Heavy Industry	**597.50**
6.1.	Bharat Heavy Electricals	**317.00**
6.1.1	Continuing Schemes	62.50
6.1.2	Replacements Modernisation and Rationalisation	60.00
6.1.3	New Schemes	**174.50**
	(a) Construction Equipment	17.00
	(b) Production of 500 M.W. sets, Expansions including boiler capacity, boiler auxiliaries, hydro sets, transportation equipment, housing etc.	157.50
		20.00
6.1.4	R & D Programmes	**70.00**
6.2	Heavy Engineering Corporation	1.00
6.2.1	Continuing Schemes	30.00
6.2.2	Balancing, Replacements & Renewals	35.00
6.2.3	New Schemes-Captive 60 MW Power Plant and Township	4.00
6.2.4	R & D Programmes	

[1]Provision is meant for technological improvement balancing equipment, mini cement plant etc.

(0)	(1)	(2)
6.3	Hindustan Machine Tools	**60.00**
6.3.1	Continuing Schemes	3.00
6.3.2	Balancing Replacements & Renewals	14.00
6.3.3	New Schemes—2 million watches, Precision instruments—Srinagar, Tool Room Expansion and Township	35.50
6.3.4	R & D Programmes	7.50
6.4	Mining and AlliedMachinery Corporation	**19.00**
6.4.1	Continuing Schemes (Balancing facilities)	3.00
6.4.2	Replacements & Renewals	3.00
6.4.3	News Schemes	**11.00**
	(a) Coal and Ash Handling Plants	3.00
	(b) Hydraulic Shop and Township	8.00
6.4.4	R & D Programmes	2.00
6.5	Bharat Heavy Plates and Vessels	**18.50**
6.5.1	New Schemes	16.50
6.5.1.1	Balancing and additional facilities to meet requirement of large size fertiliser plants, atomic power equipment and H.P. and L.P. heaters for boilers & township	15.00
6.5.1.2	Establishment of Service and job facilities	1.50
6.5.2.	R & D Programmes	2.00
6.6.	Bharat Pumps and Compressors Ltd.	**10.50**
6.6.1	Continuing Schemes	0.50
6.6.2	New Schemes—Balancing and Diversification including manufacture of feed water pumps & township	8.00
6.6.3	R & D Programmes	2.00
6.7	Scooters India Ltd.	**18.00**
6.7.1	Replacements and Renewals	4.00
6.7.2	Power Pack Project and township (New Schemes)	13.00
6.7.3	R & D Programmes	1.00
6.8	Jessops	**17.50**
6.8.1	Continuing Schemes	2.50
6.8.2	New Schemes	**14.00**
	(a) Second Phase rehabilitation	4.00
	(b) Second Phase Paper Machinery Project Expansion, diversification and up-dating manufacturing technology for coaches, wagons	10.00
6.8.3	R & D Programmes	1.00
6.9	Braithwaites	**14.00**
6.9.1	New Schemes	**13.00**
	(a) Second Phase Rehabilitation & Product diversification, introduction of new technology	7.00
	(b) Shifting of part capacity from Calcutta including balancing equipment	6.00
6.9.2	R & D Programmes	1.00
6.10	Gresham & Craven	**3.00**
6.10.1	Modernisation, Replacements & Renewals	3.00
6.11	Burn Standard	15.00
6.11.1	Second Phase Rehabilitation and Product diversification (Replacements & Renewals)	6.00
6.11.2	Modernisation of Refractory Units	8.00
6.11.3	R & D Programmes	1.00
6.12	Richardson & Cruddas	**15.00**
6.12.1	Continuing Schemes	**2.00**
6.12.1.1	Modernisation of SEW Mulund and Rubber Machinery	0.75
6.12.1.2	Shifting of Foundry	1.25
6.12.2	New Schemes—Balancing equipment Cold forming Mill Manufacture of 400 and 220 KW transmission towers	12.00
6.12.3	R & D Programmes	1.00
6.13 6.14	Arthur Butler Braitannia Engineering } Replacement and Balancing Facilities	**5.00**
6.15	Triveni Structurals	**4.00**
6.15.1	Balancing facilities including introduction of improved technology and manufacture of medium pressure vessels	**3.00**
6.15.2	R & D Programmes	1.00
6.16	Tungabhadra Steel Products	**3.00**
6.16.1	Balancing, Replacements & Renewals	3.00
6.17	Central Machine Tool Institute (R&D)	**7.00**
6.18	Engineering Projects (India) Ltd.	**0.50**
6.19	Investigation of new projects (Continuing Schemes)	**0·50**
7.	Deparmtnet of Atomic Energy.	**294.00**
7.1	Continuing Schemes	132.00

(0)	(1)	(2)
7,2	New Schemes	162.00
8.	Department of Electronics	**78.80**
8.1	Continuing Schemes	**48.00**
8.1.1	Semi Conductor Complex	15.20
8.1.2	E.T.T.D.C.	1.00
8.1.3	Computer Maintenance Corporation	4.00
8.1.4	National Information Centre	8.15
8.1.5	Industrial Electronic Programme	0.70
8.1.6	Head Quarters	0.50
8.1.7	National Centre for Softwear Development & Computing Techniques	0.40
8.1.8	Regional Computer Centre	3.20
8.1.9	Standardisation and Testing Infrastructure	6.85
8.1.10	Pilot Plant for Special Ccmp and Materials	8.00
8.2	New Schemes	**0.80**
8.2.1	Firm ware and soft ware Development	0.80
8.3	S & T Programme (TDC, NRC, DPC)	**30.00**
9.	Ministry of Shipping & Transport (Shipbuilding)	**109.36**
9.1	Hindustan Shipyards	**29.10**
9.1.1	Continuing Schemes (Development Programme Stage IA)	2.35
9.1.2	New Schemes	**26.75**
9.1.2..1	Development Programme (Stage I B & II)	20.00
9.1.2.2	Expansion of Existing Dry Dock	3.75
9.1.2.3	Engine Repair Shop	2.00
9.1.2..4	Oxygen Plant	1.00
9.2	Cochin Ship Yard Ltd.	**38.12**
9.2.1	Continuing Scheme—Original Project	**23.12**
9.2.2	New Scheme—Expansion Stage I	**15 00**
	Other New Starts	
9.3	Ship Repair Facilities	**20.00**
9.4	CMDRO (R & D)	**7.14**
9.5	New Shipyards	**10.00**
9.6	R & D	**5.00**
	Ministry of Commerce, Civil Supplies & Cooperation	
10.	Department of Commerce	**97.00**
10.1	Continuing Schemes	7.00
10.1.1	Pilot Test House, Bombay	7.00
10.1.2	Marine Products Export Development Authority	
10.1.3	Santa Cruz Electronics Export Processing Zone, Bombay	
10.2	Plantations	90.00
11.	Department of Civil Supplies & Cooperation	**83.00**
	A. Civil Supplies	**5.00**
11.1	Continuing Schemes	**5.00**
11.1.1	Metric system of weights & measures	2.50
11.1.2	Indian Standards Institution	2.50
	B. Cooperation	**78.00**
11.2	Continuing Schemes	4.70
11.2.1	Phulpur.	4.70
11.3	New Schemes	73.30
11.3.1	New Schemes including IFFCO's West Coast III Plant	73.30
12.	Department of Science & Technoglogy	**2.85**
12.1	Continuing Schemes	**2.85**
12.1.1	Central Electronics	**2.85**
13.	Ministry of Finance	**241.69**
	A. Department of Revenue	**11.98**
13.1	Continuing Schemes	0.18
13.2	New Schemes.	11.80
	B. Department of Economic Affairs	**29.71**
13.3	Continuing Schemes	15.48
13.4	New Schemes.	14.23
	C. Banking Wing	**200.00**
13.5	Continuing Schemes	200.00

Chapter 13

Transport and Communications

Transport Policy

The priorities and major physical and socio-economic objectives of the Plan have been stated earlier. The most notable amongst these objectives is the focus on rural development and the provision of minimum needs to the poor in the villages and towns. As a service function the transport plan will necessarily have to reflect these priorities.

13.2. Transport systems tend to fall into two broad categories, those which are linked to the movement of goods and those which move people. In the past, planning priorities have tended by and large to concentrate on movement of goods, especially raw material and finished products linked with developments in the organised industry and urbanised sector. Likewise the needs of intercity and urban passenger movement have been provided for to the extent resource constraints permitted. The requirements of the rural economy and population on the other hand have received inadequate attention. Even the statistical data regarding the location, length, quality and utilisation of rural roads and the vehicles that ply on them are far from satisfactory. Little information is available, for instance, on the number and usage of bullock carts.

13.3. During the new Plan it is proposed to correct some of these imbalances in the transport sector so as to serve the new goals of socio-economic policy. Some of the major policies and issues that will be examined are outlined below.

13.4. While provisions will be made for meeting the conventional goods and inter and intra city passenger traffic, greater attention will be focussed on building up a transportation system required for transporting agricultural surpluses from villages to mandis and for enabling other rural products such as leather and leather goods, handicrafts and handloom products, etc. to move from villages to towns and cities thereby enabling the primary producers to obtain better prices for their products. This transportation system will also help in delivering to the rural areas inputs such as fertilizers, seeds, extension support and will facilitate the implementation of the Minimum Needs Programme referred to earlier. Likewise transport facilities required to connect inaccessible regions, particularly those in the hilly, tribal and backward areas which have hitherto tended to remain physically and emotionally somewhat outside the mainstream of the country's progress will be given higher priority. For example, in the areas of the North Eastern Region, the provision of all-weather roads could be considered as much of a 'core' sector activity as say, power in the more developed parts of the country.

13.5. Secondly, in formulating transport plans in the past not enough attention has been paid to employment generation. The Transport sector accounts for a sizeable proportion of total investment. Of the public sector outlay in the Fourth Plan, transport and communications claimed the largest share viz. 20.4 per cent and even in the Fifth Plan this share was 17.5 per cent. In this Plan, transport and communications account for over 15 per cent of total plan outlays. The fact that different modes of transport have different employment co-efficients has not hitherto been given enough attention. For instance, some quick studies tend to suggest that employment generated, both direct and indirect, per rupee of investment in roads and associated road transport activities could be higher than it is for a similar investment in railways. Detailed studies require to be made before definite conclusions are drawn. Roads also have the added advantage of stimulating private investment in vehicles. It is clear, therefore, that in devising transport programmes in this Plan, it would be necessary to evolve an inter-modal mix of alternative transport systems so that it creates maximum employment, both direct and indirect, without adding significantly to the cost of service to the consumer. Even within a particular mode, say road or railway, there is always some scope for maximizing employment generation which has not been adequately considered.

13.6 One of the major problems faced in transportation planning has been the difficulty of building into the macro-economic planning model the spatial aspects of the development process, i.e. how to account for the impact of location of industrial and agricultural growth on the forecast of transport demand. Macro-economic planning models as they have been developed today are not, for example, in a position to assess readily the impact on the economy of the decisions to set up a super thermal plant near pitheads thereby reducing the lead of coal traffic moved by the railways. This lacuna needs to be removed by introducing locational aspects into the macro-planning model and by building in objectives such as optimizing the use of land in regional and urban planning exercises.

13.7 The railways are clearly the most efficient and economical form of transport for bulk traffic and long distance passenger movement. For meeting the requirements of this class of traffic, the growth of the railway system is both necessary and economically sound. However, when it comes to build railway lines which do not meet these objectives, the so-called 'developmental lines' in backward areas for which there is a persistent demand, the economic choices are not so clear. These lines have usually low rates of return even when the expectations of traffic build-up appear to be unrealistically high. The argument ad-

vanced in support of such projects is that a railway line has an important catalytic role to play in developing backward areas and hence without this line, the area would not develop at all or develop very slowly. In making these judgements the much less expensive alternative of a road is not usually properly evaluated. There are several cases in which lines built on this criterion appear to have made little or no contribution to the development of the area in question while there are other areas which have developed rapidly without railway lines, based solely on road systems. Since railway lines are highly capital intensive projects, new sets of criteria for judging the economic and social desirability of such proposals will have to be developed so that the more important development goals of the Plan are not jeopardised.

13.8 One of the major objectives of Government policy which must be highlighted is to discourage the migration of population from villages to cities and indeed to reverse, if possible, the growth of the larger and congested metropolitan areas. The provision of adequate transport and other infrastructural facilities is one of the important factors accounting for the growth of modern urban complexes. It is, therefore, proposed to concentrate on the improvement of transport facilities in the smaller and medium size towns so that such migration as takes place is attracted to these towns instead of to the larger cities. At the same time, the expansion and optimisation of the transport system in the larger cities will continue to receive due attention so that a socially desirable level of mobility is maintained in these cities. However, new transport schemes for the larger cities will be drawn up keeping in view the objectives of decongesting the central business districts of metropolitan cities and of containing and if possible reversing the growth of population within a practical time frame.

13.9 Another problem which requires careful consideration in framing transport policy in the new Plan is the impact of freight equalisation schemes on the location of industrial activities in the country. These schemes are presently operated in case of pig iron, steel, cement, fertilizers and foodgrains, the idea underlying the schemes being that the consumers receive these commodities at uniform prices throughout the country irrespective of their locations. While the case for a nationally uniform price for essential commodities like foodgrains can be sustained on social and equity grounds, it has been claimed that the operation of freight equalisation policy for industrial commodities like cement and steel has led to industries being located in a way which is not optimal on grounds of social efficiency. An expert group has recently made a study of the freight equalisation policy in respect of a number of industrial and consumption goods. This Group has recommended that in planning for industrial investments in the organised sector, the prices of commodities and rates for services should reflect real costs at the place of production and of consumption. The whole policy of freight equalisation is, therefore, proposed to be reviewed.

13.10 To examine these and several other related issues such as the role of inland water transport—potentially viable but neglected subsector of the transport system, as also coastal and overseas shipping, ports, transport by pipelines and ropeways and civil aviation, a high level committee to recommend an integrated transport policy is being set up shortly. This is the first study to be carried out on a comprehensive basis since the report of the Committee on Transport Policy and Coordination in 1966. The Committee will also be asked to indicate research priorities in the area of transportation. A number of other studies on transport costs, commodity flows, socio-economic benefits of transport projects, methodologies for planning rural road system as a part of an integrated state-wise transport net work, etc. have been planned during the forthcoming year.

13.11 The sectoral outlays proposed in the next five years take into account the broad national priorities of the Plan. However, during the year it is proposed to carry out more detailed studies of the type indicated above. In the light of the results of these studies and the recommendations of the proposed Committee on Transport Policy, the Plan will seek to define more sharply, the policy instruments that are proposed to be forged so that they become more closely attuned to the achievement of the major objectives of the Plan.

Railways

13.12 The Indian railway system has been and will continue to occupy a key position in the strategy of building up the basic infrastructure required for a growing and diversified economy. The main objective in the past has been to carry the projected quantum of passenger and goods traffic with a view to ensuring smooth traffic movement so as to avoid bottlenecks in the production process. However, there has always been a special objective in each Plan period apart from the general objective of ensuring an efficient rail transport system. In the First Five Year Plan, the special objective was the rehabilitation and replacement of the over aged assets; in the Second Five Year Plan, particular emphasis had to be laid to prepare the Railways for carrying the traffic generated by the new steel plants and the increased production of coal ; in the Third Five Year Plan, attention was given to build up additional capacity so as to be ahead of the traffic demand which could otherwise act as a restraint or as bottlenecks in the economic development; and in the Fourth Five Year Plan, the focus was on modernisation of the system to improve efficiency of operations. In the Fifth Plan, cognisance was taken of the need for better utilisation of the existing track and the rolling stock capacity and higher operational efficiency through maximizing of movement in block rakes and reducing turn-round time. Additional investment in the Fifth Plan therefore was directed towards improvement of the existing capacity more than the extension of the railway system as it was felt that with better utilisation of the existing capacity and modernisation of railway traction it would be possible to meet the demands of traffic both for movement of goods and people. As a result, there has been a significant improvement in the operational efficiency of the Railways as measured by the indices of utilisation of railway rolling stock in terms of wagon turn-round time, wagon/vehicle/engine kilometres per day and net tonne kilometres moved per wagon/engine day, etc. Originating freight traffic is expected to increase from a plateau of 200-210 million tonnes during the year 1965—75 to 240 million tonnes in 1977-78. Today, the Indian railway stystem

is the largest in Asia and the fourth in the world; it is also the second largest system in the world under single management.

13.13 The basic objectives of the Railway Plan covering the period 1978-79 to 1982-83 are mainly to augment the capacity for handling the expected increase in freight and passenger traffic, to modernize the system in respect of its equipment and practices, to promote better utilisation of the existing assets and to move further in the direction of achieving self-sufficiency in equipment by undertaking increased local production of critical items. Also, special emphasis would be given to research and development in the fields of modernisation and improvement of Railway technology so as to optimise the utilisation of assets and improve the standards of safety and reduce the operating costs.

13.14 Originating freight traffic on the Railways in 1982-83 is expected to be in the range of 300—313 million tonnes. The bulk of this traffic would consist of coal, steel and raw materials to steel plants, cement, export ore, fertilizers, petroleum products and foodgrains. The freight traffic trends will be kept under review so as to direct the plan investment into building up the required capacity. Non-suburban passenger traffic is expected to increase at the rate of 3 per cent per annum and the suburban traffic at 7 per cent per annum in the five year period ending 1982-83.

13.15 Taking into account the projected growth rate in the freight and passenger traffic, an outlay of Rs. 3350 crores has been provided for the programmes of the Railways. This outlay includes Rs. 125 crores for metropolitan rail transport and Rs. 80 crores for contribution to the State Road Transport Corporations to assist them in augmenting their fleet strength. The programme-wise break up of these outlays is shown in the following Table :

Table 13.1 : Outlays on Railways : 1978—83

(Rs. crores)

Sl. No.	Items	Outlays
(0)	(1)	(2)
1.	Rolling Stock	1551
2.	Workshop & Sheds	130
3.	Machinery and Plant	114
4.	Track Renewals	350
5.	Bridge Works	60
6.	Line Capacity Works	415
7.	Signalling & Safety	110
8.	Electrification	120
9.	Other Electrical Works	25
10.	New Lines	120
11.	Staff Welfare	20
12.	Staff Quarters	50
13.	Users' Amenities	25
14.	Other specified works	15
15.	Investment in Road Services	80
16.	Inventories	40
	TOTAL	**3225**
17.	Metropolitan Transport Projects	125
	GRAND TOTAL	**3350**

13.16 The total acquisition of wagons, coaches, electrical multiple units (EMPs) for the suburban railways, diesel and electric locomotives and power packs during the five year period is indicated in the table below :—

Table 13.2 : Acquisition of Rolling Stock for Railways: 1978—83

Sl. No.	Items	1978—83		
		Additions	Replacements	Total
(0)	(1)	(2)	(3)	(4)
1.	Wagons (in terms of 4 wheelers)	43000	30000	73000
2.	Coaches	3500	2,700	6200
3.	EMUs	650	200	850
4.	Locomotives :			
	(i) Diesel	480	300	780
	(ii) Electric	320	..	320
5.	Diesel Locomotive Power Packs	..	150	150

In addition, some track machines, cranes, boilers, spare components etc. would also be required. This acquisition programme would be kept under review in relation to actual traffic trends.

13.17 In the next five years greater attention will be paid to the programme for track renewals. The programme of gauge conversion will have to be reviewed in the context of constraint of resources and also the heavy cost it entails. It appears that for quite sometime to come the railway system will have to continue as multi-gauge system from the point of view of optimal utilisation of the existing resources. The programme of gauge conversion will, therefore, be mainly confined to completing the projects on hand and new projects will be started only if the alternatives of increasing the capacity of the existing metre gauge system by patch doubling, signalling etc., are neither feasible nor economically viable or where they are operationally necessary.

13.18 It is proposed to view the transport needs of metropolitan cities in an integrated manner both with the object of reducing the congestion in the central business districts by encouraging the dispersal of location of offices, hotels, cinemas and industrial units on the one hand and the broader goal of containing and eventually reversing the growth of population in the large cities on the other. A view will therefore be taken on both new and expansion of suburban systems after the report of the proposed Committee on Transport Policy has been studied. In the meanwhile, adequate provision has been made for the expeditious completion of the work on the Calcutta Rapid Transit System and the Bandra Fly over Project in Bombay.

13.19 A new wheel and axle plant is proposed to be set up to achieve self-sufficiency in the production of critical items of equipment.

13.20 The Indian Railways over a long period built-up a high level of expertise and skill and they are now

in a position to provide consultancy and construction service of a very high order to other countries. A special mention of the role of the Rail India-Technical and Economic Services (RITES) and the Indian Railways Construction Company (IRCON) is therefore necessary. Apart from providing expertise and service, earning foreign exchange and increasing international awareness of Indian technological skills, these organisations will also help in promoting exports of wagons, coaches and other items in which we have achieved self-sufficiency and have surplus capacity.

13.21 A high powered Expert Committee has been appointed to study the structure of rail freight rates and fares and make suitable recommendations in the matter.

Roads

13.22 In the context of restructuring the Plan with a focus on agriculture, rural development and rural industries coupled with the need for substantial generation of employment, the road development programmes have a pivotal role in the Five Year Plan 1978—83. Besides being an important component of the basic infrastructure for the economic development of the country, they also generate considerable employment. Roads provide a very effective means of transport for the movement of goods and passengers over short and medium distances and to some extent, even over long distances at least for certain special commodities governed by users' preference. Within an integrated road development programme, rural roads are proposed to be assigned a comparatively higher priority so as to bring thousands of our villages into the national mainstream.

13.23 A review of the progress hitherto achieved indicates that the national highway system covers approximately 7 per cent of the entire surfaced road length of the country. In terms of geographical coverage, the national highways at present touch nearly all State capitals, connect all the major ports with the hinterland, and serve many important industrial and tourist complexes.

13.24 Under the Minimum Needs Programme, the target in the Fifth Five Year Plan was to provide a link road to all the villages with a population of 1500 or above numbering about 29,000. As against this, about 12,000 villages would actually have been covered by the end of 1977-78. In the Five Year Plan 1978—83, the remaining 17,000 villages are expected to be covered. In addition, about half the number of the villages that have a population between 1000—1500 will be provided with a link road, the remaining half will be covered in the period 1983—88. Reflecting the priority which has been assigned to the road net work in rural areas, a provision of Rs. 800 crores has been made in this Plan. The expenditure on rural roads in 1974—78 being about Rs. 200 crores, the increase in outlay for the next five years 1978—83 is four times. A special centrally-sponsored programme for construction of roads in tribal areas is being started in view of the pressing need for developing these areas; this will supplement an outlay of Rs. 275 crores in the State Sector.

13.25 One of the major criticisms of the rural road programmes taken up hitherto is that they get destroyed or damaged during the rainy season. In the Plan, greater attention will be paid to the construction and alignment of such roads so that this problem is largely overcome.

13.26 Likewise, the methodology of planning rural roads so that their social benefit cost ratio is maximised and they become an integrated part of the State and national highways system is being examined.

13.27 About 70 per cent of the national highway net work is expected to have two-lane carriageway after the completion of the ongoing works. The road pavements shall also be strengthened for the growing traffic requirements in a phased manner over about two Five Year Plan periods by suitably identifying the priority selected stretches.

13.28 An outlay of Rs. 220 crores has been provided for the removal of important deficiencies and improvements for traffic needs. Provision has also been made for permanent remedial measures for such stretches of national highways as have been identified to be prone to floods and cyclones. Another important scheme expected to be completed in this Plan is the Second Hooghly Bridge. Substantially increased provision has been made for centrally assisted State roads of economic or inter-State importance. Another scheme which did not start till late in the Fifth Plan namely the Sensitive Border Area Roads Programme will be vigorously pursued in the Central Sector. This programme is for the construction of roads in far flung areas where there is high priority attached to establishing closer links between these areas and the rest of the country in order to hasten the process of integration.

13.29. The total outlay in the Central Sector Roads Programmes is Rs. 683 crores which includes Rs. 20 crores for the roads in the tribal areas. In the State Sector, the total provision is Rs. 1500 crores of which Rs. 800 crores are for rural roads under the Minimum Needs Programme and Rs. 275 crores for roads in the tribal areas. Taken together and excluding the provision for roads under the North Eastern Council, the outlay on roads during this Plan will go up to Rs. 2183 crores as compared to Rs. 1354 crores in the Fifth Plan.

13.30 A study by the National Council of Applied Economic Research has highlighted the high employment potential of investment in roads. For an investment of Rs. 1 crore, a potential of employment of the order of 5200 man years is created in the road construction in the Central Sector. This potential is 6500 man years per crore of rupees spent on roads in the State Sector. As the outlay in State Sector is more than twice the Central Sector programme, this is expected to lead to more employment generation than the outlays suggest particularly because of the high labour content required for construction of rural roads.

13.31. Physical targets particularly in the case of rural roads where the labour component is higher will be greater than what has been projected if the tempo of utilising the available large stocks of foodgrains under "Food for Work" programme is stepped up.

13.32 Allocations for various programmes under Central and State Sectors are shown in the following table :

Table 13.3 : Outlays on Roads Programme : 1978—83

(Rs. crores)

Sl. No.	Programme	Outlay
(0)	(1)	(2)
I.	CENTRAL SECTOR	
1.	National Highways	456.00
2.	Machinery	14.51
3.	Strategic Roads	46.32
4.	E&I Roads	58.75
5.	Road Communication in the Sensitive Border Areas	32.05
6.	Special Road/Bridge Works of National Importance	48.92
7.	Roads in Tribal Areas	20.00
8.	Highway Research, Development and Planning Studies	6.00
9.	Setting up of Highway Training Institute	1.00
	TOTAL	683.55 or say 683.00
II.	STATE SECTOR	
1.	Rural Roads	800.00
2.	Roads in Tribal Areas	275.00
3.	Other Main Roads (State Highways, MDRs etc.)	425.00
	TOTAL	1500.00
	GRAND TOTAL OF CENTRAL AND STATE SECTORS	2183.00

Road Transport

13.33 Road Transport has begun to play an increasingly important role in the economy of the country. The share of non-bulk short distance freight traffic and passenger traffic as a proportion of the total traffic has been growing steadily as indicated in the following table :

Table 13.4 : Estimated Relative Share of Rail and Road in Goods and Passenger Traffic

Year	Railways	Road Transport	Percentage Share	
			Railways	Road Transport
(1)	(2)	(3)	(4)	(5)
	(Goods Traffic (Billion tonne Kms)			
1960-61	88	35	72	28
1965-66	117	55	68	32
1968-69	125	64	66	34
1973-74	122	67	65	35
1976-77	157	76	67	33
	Passenger Traffic (Billion Pass. Kms.)			
1960-61	78	57	58	42
1965-66	96	62	61	39
1968-69	107	153	41	59
1973-74	136	211	39	61
1976-77	164	261	39	61

13.34 During the next five years, with the increased emphasis on roads the share of road transport in both goods and passenger traffic is expected to grow further.

13.35 The trend towards increasing State ownership of passenger road transport system on State and National Highways is expected to be maintained as experience has shown that this is generally the only way of providing dependable services running on schedule. The performance of State Road Transport Corporations (SRTCs) however, vary a great deal in terms of efficiency and costs. Without charging excessive fares a number of SRTCs have been able to provide adequate replacements for buses and expand their services substantially from their own resources. The majority, however, are not well run and this is an area which wil require considerable attention during the Plan. A new priority which will have to be brought into the development of the road transport system is its role in supporting the programme for decongesting large towns and cities. The question of fare structure of passenger transport services will also need closer scrutiny to identify the pattern of explicit and implicit subsidies and its socio-economic impact on the various categories of users and the location of industrial units.

13.36 The freight traffic is predominantly a private sector activity and will continue to remain so.

13.37 Little attention has hitherto been paid to the transport requirements of the rural areas. It is proposed to carry out detailed socio-economic studies of the role of the bullock cart, cycles and mechanised transport needs of the rural areas so that they can be assisted to

provide required support to the economic development of rural areas. Special attention will be paid to employment creation in the construction, operation and maintenance of the road transport system.

13.38 In the Fifth Plan a provision of Rs. 29.77 crores was made in the Central Sector for the Delhi Transport Corporation (DTC). In the 1978—83 Plan, Rs. 60 crores have been provided for DTC for purchase of buses, construction of depots, workshop facilities, bus terminals etc. With the outlay, it should be possible for the Corporation to acquire about 2749 buses of which 1043 will be for replacement.

13.39 In the 1978—83 Plan, a provision of Rs. 675 crores has been made for the State Road Transport Corporations/Undertakings of which Rs. 372 crores will be provided by internal resources. With the possible improvement in operational efficiency, this programme could be considerably larger. A provision of Rs. 80 crores has been made in the Railway Plan for contribution to the capital of the State Road Transport Corporations. In terms of physical coverage, priority will have to be given to strengthening the services on the existing routes and extending them into semi-urban areas.

13.40 For developing improved types of carts and mechanised cycle rickshaws, research studies and surveys have been proposed in the Plan. It is also necessary to devise a suitably strengthened chassis specifically for buses to be operated in rural areas. A provision of Rs. 5 crores has thus been made for research and development work relating to modernisation of animal driven carts, mechanisation of cycle rickshaws and development of chassis for rural areas.

Major Ports

13.41 Durring the first three Plan periods, the main emphasis was on augmentation of berthing capacity, and replacement and modernisation of the plant and equipment. However, the conditions at the ports continued to remain deficient in many respects. Draught limitations precluded handling of large bulk carriers and tankers. Loading and unloading of vessels was mainly done manually and the ports in general had not been equipped with mechanical cargo handling facilities. A beginning was made in the Third Plan for improving the port conditions by taking up new projects including modernization and expansion of the dock at the Bombay Port, construction of the deep draught Haldia Dock as a satellite port of Calcutta and development of the Mangalore and Tuticorin ports. The objective of improving the port conditions was continued to be pursued in the subsequent three Annual Plans (1966—69) and a number of other projects were taken up including Madras Outer Harbour Project for handling large sized oil tankers and ore carriers, Visakhapatnam Outer Harbour Project for iron ore handling and dredging of the main harbour channel of the Bombay Port. During the Fourth Five Year Plan the emphasis was on speedy completion of these projects so as to improve the cargo handling facilities at various ports. A Central Dredging Organisation was set up and river training works were taken up in the Bhagirathi Hooghly River System with a view to optimising the benefits from the Farraka Barrage. Most of these projects were completed or brought near completion in the Fifth Plan. The Madras and the Visakhapatnam Outer Harbours have already been commissioned, the Haldia Dock System started operation in March 1977 and the mineral oil berth at the Mormugao Port was commissioned in December 1976.

13.42 The traffic at major ports which was 19.2 million tonnes at the beginning of the First Plan is expected to increase to 68.7 million tonnes in 1977-78. The traffic would have been more but for a variety of reasons mainly the shortfall in the export of iron ore and recession in the steel industry. The traffic at the major ports in 1982-83 on account of export and import of major commodities is likely to be 100 million tonnes mainly consisting of bulk commodities like crude oil, petroleum products, iron ore, coal etc.

13.43 Substantial investments made on the development of major ports in Fourth and Fifth Plans have now added to their capacity to meet the requirements of projected traffic in 1982-83 and therefore no new major project, excepting Nhava-Sheva at Bombay is proposed in the Five Year Plan ending 1982-83. The emphasis would, therefore, be on the speedy completion of the ongoing projects and optimal utilisation of the capacity. Facilities will also be developed to handle large sized vessels of a capacity upto 1 lakh DWT at other ports.

13.44 A provision of Rs. 390 crores has been made for major ports in the Five Year Plan 1978—83. This includes Rs. 165 crores for on-going schemes and Rs. 225 crores for new schemes including replacement and modernisation of existing assets. The contribution of the Port Trusts in financing the outlay is estimated at Rs. 52 crores.

Minor Ports

13.45 The traffic handled by minor ports which was 3.8 million tonnes in 1951-52 increased to 8.2 million tonnes in 1965-66. Since then it has been more or less constant at around 7 to 8 million tonnes annually. Some of the minor ports have played a vital role in handling imported foodgrains and relieving pressure on the major ports besides facilitating internal water transport in the country. The traffic at minor ports is not likely to increase due to diversion of iron ore traffic to major ports and reduction in the coastal movement of POL. However, the minor ports have sizeable potential for development of deep water fishing and for the export of specific general cargo from the selected ports.

13.46 The responsibility for development of minor ports essentially vests in the State Governments. The Central Government rendered technical and financial assistance for selected schemes of development of these ports. The port development schemes at Andaman & Nicobar Islands and at Lakshadweep are executed by the Central Government. The provision for minor ports development is Rs. 20 crores in the Central Sector and Rs. 52 crores in the State Sector. Central technical assistance will continue to be rendered to the State Governments.

Lighthouses and Lightships

13.47. Over the years, the Plan programmes have added new lighthouses at the coasts ; other navigational aids such as Radio Beacons, high frequency transmission sets, lighted and unlighted buoys have also been provided. In the Five Year Plan 1978—83, a provision of Rs. 16.01 crores has been made which includes Rs. 9.35 crores for completion of various 'on-going' schemes and Rs. 6.66 crores for new works. Important 'on-going' schemes are : Salaya Decca Chain and the floating aids for Salaya Approach Channel.

Inland Water Transport

13.48. The development of Inland Water Transport (IWT) in the country, as part of the plan programme, started from the Second Five Year Plan. Since then a total investment of about Rs. 39 crores has been made for the development of I.W.T.

13.49. The major achievements made under the Central Sector programme during the last twenty years include construction of inland ports at Pandu & Jagigopa in Assam, development of Rajabagan Dockyard and Kulpi workshop, and construction of mooring buoys etc. Investment was also made for the operation of experimental cargo services on the Ganga between Patna and Chunar. States have developed inland water transport facilities through a number of schemes such as purchase of crafts and dredgers and construction of jetties.

13.50. Inland water transport has considerable potential although its present utilization is very low. In terms of tonne-kms. carried it works out to about 0.8 billion. During the Plan 1978—83, it is proposed to give IWT fresh impetus and encouragement. The overall approach will be to move in this area selectively, taking up only specific schemes of inter-State and national importance for development under the Centrally sponsored programme, the other schemes whose economic viability is evaluated by the State Governments being included in the Plans of the States. A provision of Rs. 31 crores has been made for the Central Sector programme and Rs. 12 crores for the State Sector Programmes.

Shipping

13.51. The Indian Shipping tonnage has grown significantly over the last twenty years. The operative tonnage crossed the 5 million GRT mark during the year 1976-77. The following table summarises the growth of Indian tonnage between 1956 and 1978.

Table 13.5 : Growth of Indian Tonnage Between 1956 and 1977

Tonnage as in	No. of ships	Total GRT (million)
(1)	(2)	(3)
1956	126	0.48
1961	172	0.86
1966	221	1.54
1974	274	3.09
1978 (Anticipated) . .	375	5.36

13.52. The Fifth Plan provided for a shipping tonnage target of 6.5 million GRT in operation with 0.5 million GRT on order at the end of 1978-79. In order to achieve this target, the Plan provided for Rs. 410 crores for loans to Shipping Development Fund Committee. In addition, Rs. 500 crores were allotted from the free foreign exchange reserves for the purchase of ships abroad.

13.53. The share of Indian Shipping in the transportation of cargo in India's overseas trade has been continuously increasing. The existing share is about 42 per cent on an overall basis ; the share of Indian flag vessels is about 28 per cent in bulk cargo and 85 per cent in the transportation of crude oil.

13.54. Although India has a long coast line extending over 5,000 kilometres from Calcutta in the East to Kandla in the West, it has not been possible so far to improve coastal shipping to any significant extent as a mode of transport. In 1975, 37.36 lakh tonnes of freight and 2.06 lakh passengers were carried by coastal shipping between ports in the country. The cargo carried by coastal shipping consists entirely of bulk commodities such as coal, salt, cement and general cargo comprising foodgrains, fertilisers, jute, tea, iron and steel products besides POL. Coal is the principal item of dry cargo on the coast. Even though sea transport is the most efficient of all forms of transport in energy terms, its full potential can only be realised in the carriage of bulk goods and where either shippers or the consignees or both are situated on navigable waters. Its potential, therefore, to take the traffic moved by railways or roads to any considerable extent is some what limited.

13.55. In the Plan 1978—83 the strategy is to augment the liner tonnage for meeting increasing trade requirements of general cargo and also to replace the overaged tonnage particularly for the coastal shipping. It would also be necessary to provide for some small tankers to meet the essential lighterage and coastal movement requirements of our refineries. Measures required to put the coastal shipping industry on a sounder economic footing will be examined by the proposed Committee on Transport Policy.

13.56. The present investment and the tonnage of the shipping industry is equally shared by the private and public sector. This pattern is likely to continue in the next five years. As shipping is a highely specialised, capital intensive and competitive industry, the economies of scale would favour a more centralised organisation in the public sector rather than a large number of smaller corporations. The Plan has also to take into account the utilisation of capacity in the shipyards. To make the shipbuilding industry more competitive, measures for modernising the manufacturing techniques and increasing productivity will be pursued.

13.57. It is proposed to acquire an additional tonnage of 2.65 million GRT so as to reach a total of 7.77 million GRT at the end of 1982-83 vide table below :

Table 13.6 : Details of the Operative Tonnage, Tonnage on Order and Tonnage to be Acquired

	Tonnage (Million GRT)
(1)	(2)
Tonnage at the beginning of 1978-79	5.36
Add tonnage under construction for delivery during the Plan 1978-83	0.58
TOTAL	**5.94**
Deduct tonnage expected to be scrapped	0.82
Net available tonnage	5.12
Add tonnage to be acquired during 1978-83	1.65
Add tonnage to be on advance order at the end of 1982-83	1.00
TOTAL TONNAGE IN OPERATION/ON ORDER AT THE END OF 1982-83	7.77

13.58. A provision of Rs. 637 crores has been made for this sector. This includes Rs. 625 crores for loans and subsidy to the Shipping Development Fund Committee and Rs. 10 crores for loans to the sailing vessels industry. Provision has also been made for expansion of training facilities and programmes for the welfare of seamen. These provisions, however, do not include the funds to be made available for acquisition under Ship Acquisition From Abroad Under New Scheme (SAFAUNS).

Communications

13.59. No less than the transport sector, the Communications plan will also have to be re-oriented to play the supportive role for the new priorities. The major components of the Communication System are the Postal Services network and the internal and external (overseas) telecommunication services.

Postal System

13.60. The postal services by the end of 1977-78 will cover almost all villages and towns of India with a daily delivery system. Out of the 6 lakh villages in the country at present, over 2 lakh villages have daily collection through letter boxes. It is proposed to cover the remaining 4 lakh villages during the next ten years. Provision has, therefore, been made to extend the daily clearance facility to another two lakh villages in the next five years and the remaining two lakhs will be covered in the subsequent Five Years ending 1988. Twenty five thousand new post offices will be provided during 1978—83 out of which 16,000 will be in tribal, hilly and backward areas. About 3,000 rural post offices will be upgraded which is more than twice as many as in the Fifth Plan. Approximately 50,000 additional extra departmental delivery agents will be appointed to improve the quality of the rural postal service. In addition provision is being made for construction and renovation of buildings, improving training facilities and increasing the fleet of rail and road mail services vans and vehicles. In order to sustain employment generation, the investment on mechanisation of mail sorting operations has been slowed down.

13.61. An outlay of Rs. 79.50 crores has been provided in the 1978—83 Plan. This includes Rs. 29 crores for expansion of postal facilities and Rs. 24.15 crores for post office and railway mail sorting buildings.

Telecommunication System

13.62. Although there has been rapid growth in the telecommunication system, the demand has outstripped the supply particularly in the large cities. The main thrust of the five year telecommunication plan will be support for the development of the rural areas, smaller towns and new growth centres. It is accordingly proposed to extend telecommunication facilities into the rural areas, particularly backward, hilly and tribal areas through the provision of 15,000 new long distance public call offices. It is further proposed to provide :

(a) telephone connections in rural areas, smaller towns and new growth centres practically on demand ; and

(b) to substantially improve the trunk services connecting places to the large towns and cities.

While the existing demands of the metropolitan cities are proposed to be met in full and additional exchange capacities and telephone connections provided to relieve congestion and overloading in the existing network, both local and trunks, it is proposed to take fiscal and other measures which will depress the demand for new telephones in these cities. On the other hand, telecommunication facilities in satellite towns and areas which help to decongest cities will be available readily. It is proposed to add a total of about 11.5 lakh direct exchange connections during the plan period with possibility of further addition if the objectives of the Plan so dictate. About 15000 Telegraph Offices will be opened during the Plan mostly in the villages.

13.63. An outlay of Rs. 1848 crores has been provided in the 1978—83 plan for the development of telecommunications. Of this, about forty-three per cent is reserved for telecommunication facilities in the rural areas, smaller towns and cities and new growth centres. Further an outlay of Rs. 37.5 crores has been reserved exclusively for telecommunication facilities in the tribal areas.

INSAT

13.64. The Indian National Satellite will be in position in 1981. It is proposed to use this for strengthening the long distance telecommunication links by the provision of earth stations at various cities. It will also enable reliable communication links to be established with remote areas such as Leh, Andaman, Nicobar, Lakshdweep and the North Eastern Region. Provision has been made for this purpose.

Research and Development

13.65. The research and development activities are primarily directed to the introduction of new technologies in the telecommunications network and also for investigation and improvement of the performance of the existing systems. Efforts will also be directed towards evolving a more efficient and reliable switching system for the country and development of new technologies for improving rural telecommunication facilities.

Indian Telephone Industries Ltd (ITI)

13.66. An outlay of Rs. 84.19 crores is provided for the development programme of ITI. Besides making full provision for on-going schemes it also provides for a new switching factory with a capacity of 2 lakh lines.

Hindustan Teleprinters Limited (HTL)

13.67. The Plan provides Rs. 6 crores for the programme of HTL. Provision has been made to step up the production of teleprinters from 8,000 to 10,000 units and develop new lines of electronic teleprinters. Capacity will be set up to manufacture electric typewriters in Hindi and other regional languages. The programme for the replacement of old plant and machinery will be continued in this Plan.

Overseas Communication Service (OCS)

13.68. The Plan includes a provision of Rs. 70 crores for the OCS Department. It provides for completion of the major spillover schemes such as IOCOM cable project, Indo-USSR Tropo Scatter Link and the augmentation of Bombay and New Delhi Gateway Exchanges. Provision has been made for further augmentation of transmission and switching capacity and additional infra-structure for the optimum utilisation of wide band capability made available at the existing earth stations.

13.69. It has been decided that India should become a member of the International Maritime Satellite Organisation (INMARSAT) which is preparing a plan for providing maritime communication facilities. India will be participating in the capital investment required for the space segment and will also provide the necessary earth segment for linkages with INMARSAT.

Monitoring Organisation

13.70. The Plan envisages a substantial step up in the programme of the Monitoring Organisation in view of the tremendous increase in radio communications and a provision of Rs. 7 crores has been made. Two major schemes to be taken up in the Plan period relate to modernisation and expansion of the existing facilities and monitoring of space emissions. Existing monitoring facilities are proposed to be updated to conform to the wide-band radio communications.

13.71. The following table gives the programme-wise outlay under the Communications Sector :

Table 13.7 : Programme-wise Outlay for the next Plan 1978—83

(Rs. crores)

Sl. No.		Fifth Plan	1978—83
(0)	(1)	(2)	(3)
A.	P&T Department		
	(i) Postal Services . .	24.38	79.50
	(ii) Telecommunications (including INSAT) . . .	1149.45	1848.00
	TOTAL (A) . . .	**1173.83**	**1927.50**
B.	Other Communications :		
	(i) Indian Telephone Industries	52.85	84.19
	(ii) Hindustan Teleprinters .	3.00	6.61
	(iii) Overseas Communications Service	35.87	70.22
	(iv) Monitoring Organisation .	1.06	7.08
	TOTAL (B) . . .	**92.78**	**167.50**
	TOTAL (A)+(B) . .	**1266.61**	**2095.00**

Civil Aviation

13.72. Air Transport in India has registered a very high growth rate during the last 20 years. The traffic of Indian Airlines which was 434 million revenue passenger kms. (RPKs) in 1957-58 is likely to increase to 3395 million RPKs (excluding the Gulf traffic and the capacities generated on behalf of Maldiv International) in 1977-78 and that of Air India from 47 million revenue tonne kms. (RTKms) to 750 million RTKms during the same period. The objective has been to expand the carrying capacity of Indian Airlines and Air India to meet the growing requirements of passenger and cargo traffic. At the same time, emphasis has also been laid on the standardisation and modernisation of the fleet of Indian Airlines with a view to introducing more services and ensuring greater comfort and speed. The infra-structural support of airports requires to be strengthened to provide adequate operational and terminal facilities.

13.73. The outlays and programmes for the Plan 1978—83 have been formulated to meet the requirements of growth of passenger and cargo traffic. However, the addition to the capacity on the domestic routes will have to be determined selectively taking an integrated view of the various modes of transport and their capacity. Domestic air transport facilities will be expanded only on such routes as cannot be served by road or rail transport efficiently and at much less cost and where speed is of paramount consideration. It is also necessary to ensure the optimum utilisation of the fleet of these two Corporations. The development of infra-structural facilities provided by the Civil Aviation Department and International Airports Authority of India has been planned to meet the requirements of the traffic capacity. While providing these facilities, the requirements of safety-oriented projects and works which provide support to aircraft operation will be given higher priority.

Air India

13.74. A provision of Rs. 276 crores has been made for the acquisition of aircraft and providing support facilities. The present fleet of Air India consists of 9 Boeing-707 and 5 Boeing-747 aircraft. It is proposed to add 10 wide bodied aircraft to the fleet in this Plan which includes one for replacement of the Boeing-747 aircraft lost in crash recently and another Boeing-747 aircraft for which orders have already been placed. With this addition, the carrying capacity of Air India will increase from 1196 million available tonne kms.

(ATKMs) in 1977-78 to 2034 million ATKMs in 1982-83. The entire programme of Air India will be financed out of its own internal resources.

Indian Airlines

13.75. The present fleet of Indian Airlines consists of 3 Air Bus, 15 B-737, 3 Caravelle, 8 F-27 and 15 HS-748 aircrafts. With a provision of Rs. 190 crores, the Indian Airlines will add to their fleet, a capacity equivalent to 17 B-737 aircraft increasing their carrying capacity in terms of available seat kms. from 4846 million ASKMs in 1977-78 to 8245 million ASKMs by 1982-83.

13.76. At present, Indian Airlines have both turbo-prop and jet aircraft. For some time to come, it is planned to continue to use turbo-prop aircraft on a few routes due largely to the limitation of the available infra-structural facilities (e.g. by way of inadequate length of run-ways, pavement strength, aprons, taxi-tracks etc.)

13.77. The entire programme of Indian Airlines will be financed from its own internal resources.

International Airports Authority of India

13.78. International Airports Authority of India was set up in 1972 to plan, develop, construct and maintain the international airports in India as a sequel to the recommendations of International Airports Committee.

13.79. The provision for the programmes of this Authority is Rs. 84 crores for 1978—83. The new International Passenger Terminal and Corgo Complex at Bombay will be completed. As the rated capacity of the new international terminal complex at Bombay is likely to be exhausted soon after it becomes operative, provision has been made for the new International Terminal Complex (Phase II). The construction of International Terminal Module at Delhi will be taken up during the Plan. The modification in the existing terminal buildings will be taken up to ensure maximum utilisation of their capacity. Runways, taxiways, aprons, roads and external services would be improved. Provision has been made for the acquisition of electrical equipment including lighting and facilitation and operation equipment.

Civil Aviation Department

13.80. A provision of Rs. 150 crores has been made for the projects of the Civil Aviation Department representing a substantial step up over the 5th Plan provision. The programme aims at the expansion and improvement of aeronautical communication services, aerodromes and acquisition of aerodrome equipment for ensuring better safety and reliability. It is also proposed to augment calibration facilities so as to improve the quality and reliability of operation of radio, radar and navigational aids installed at various airports. Under the programme of Works at Aerodromes, emphasis will continue to be on the development of existing aerodromes rather than construction of new ones. Extension, strengthening and improvement of runways, taxi-tracks and aprons will be taken up at a number of airports so as to facilitate the safe operation of Air Bus, Boeing-737 etc.

13.81. The table below gives the broad break-up of outlay for the Plan 1978—83 for Civil Aviation :

Table 13.8 : Outlay in Fifth Plan 1974—79 and the Plan 1978—83

(Rs. crores)

Sub-sector	Fifth Plan outlay (1974—79)	Plan Outlay 1978—83
(1)	(2)	(3)
Air India	103.00	276.00
Indian Airlines	99.46	190.00
International Airports Authority of India	27.67	84.00
Civil Aviation Department . .	65.14	150.00
TOTAL	**295.27**	**700.00**

Tourism

13.82. International tourism in India showed a steady growth since the beginning of the First Five Year Plan. The number of foreign tourist arrivals in the country increased from 20,000 in 1951 to about 6.41 lakhs in 1977. During the Fifth Plan period the growth rate has been around 12 per cent per annum. There has also been a steady increase in the destination tourist arrivals whose share has gone up from 43 per cent in 1964-65 to about 74 per cent in 1972-73. The average stay per tourist has also registered an increase over the years. The major factors contributing to the growth of international tourism to India include augmentation of infrastructural facilities, introduction of concessional fares by Indian Airlines and Railways, liberalisation in frontier formalities and more intensive promotional activities abroad.

13.83. The Central Sector expenditure on the tourism programme increased from Rs. 87 lakhs in Second Five Year Plan to little over Rs. 29 crores in the Fifth Plan. In the State sector the increase was from Rs. 1.34 crores to Rs. 34.50 crores during the same period. The total expenditure since the Second Five Year Plan has been of the order of Rs. 118 crores including Rs. 60 crores in the Central Sector and Rs. 58 crores in the State Sector.

13.84. The significant achievements during this period have been in the field of accommodation and transport facilities. The total number of rooms available in the approved hotels at the end of 1978 will be 18,700. Another 4,000 rooms are under construction. The other achievements include construction of 15 Youth Hostels and 11 tourist bungalows, establishment of resorts at Gulmarg and Kovalam, development of facilities in selected wild life sanctuaries, preparation of master plans for selected archaeological centres of tourist importance and opening of a number of tourist offices abroad.

13.85. During the Plan 1978—83 the objective is to consolidate the gains already achieved through vigorous and result-oriented marketing and also develop tourist facilities in a more integrated and coordinated manner. The broad division of responsibilities between the Central and State Governments will continue to be the same as in the previous Plans. The programmes intended primarily to stimulate international tourism would be in the Central Sector and those for the promotion of domestic tourism in the State Sector.

13.86. The annual growth rate of foreign tourist traffic in the next five years has been assumed at 15 per cent. On this basis the tourist traffic is expected to increase from about 6.41 lakhs in 1977 to about 12.35 lakhs in 1982 and the requirement of additional hotel rooms has been estimated at 17,000. It is proposed to meet the additional demand of hotel rooms mainly through private sector investment. A provision of Rs. 6.44 crores has been made for interest subsidy on loans to be advanced by the financial institutions to provide hoteliers for the construction of hotels.

13.87. A provision of Rs. 63 crores has been made for the programme under the Central Sector. This includes Rs. 33 crores for the Central Department of Tourism and Rs. 30 crores for the India Tourism Development Corporation (ITDC). The programmes of the Department of Tourism include development of mountain and beach resorts, cultural tourism, wild life tourism, sports tourism, social tourism, promotion and publicity abroad, training etc. Provision has also been made for the construction of Janata hotels.

13.88. In the programme of the ITDC, major emphasis has been laid on consolidation of the existing units by undertaking suitable expansion, addition, alteration and improvement. The other programmes include the establishment expansion of transport units, manpower planning, establishment and renovation of duty free shops etc. Construction of new hotels will be taken up only at selected places of tourist importance.

13.89. In the State Sector, an outlay of Rs. 46 crores has been provided for promotion and development of domestic tourism. The programmes include construction of low cost accommodation, infrastructural facilities such as water & electricity supply, transportation for sightseeing, publicity and promotion and environmental planning. Facilities at places of pilgrimage and on yatra routes will receive special attention.

Meteorology

13.90. Meteorological services, on a national scale, are rendered by India Meteorological Department for the benefit and use of farmers, fishermen, aviation, shipping, defence etc. The Department has the responsibility for a suitable warning system on cyclones, heavy rains and snow, dust-storm as also for detecting and locating earthquakes. During 1977, the Department collaborated with USSR in Monsoon 1977 Experiment—a programme of research and data collection geared to improving the understanding of the causes underlying the behaviour of the monsoon. As a further step in this, the department is participating in an international project known as Monex'. The three autonomous institutes namely, the Indian Institute of Astro-physics, Indian Institute of Geo-Magnetism and the Indian Institute of Tropical Meteorology, play a complementary role in organising the scientific research on meteorology aspects, geomagnetism and astrophysics.

13.91. A major new facility is INSAT which has on it a high resolution infra-red radio meter and other facilities to enable continuous monitoring of cloud and wind conditions thereby improving the ability to predict weather changes especially the monsoon and giving advance warning of hazards such as cyclones and severe storms. Remote sensing platforms connected to INSAT will be set up enabling accurate measurements to be made of snowfall and precipitation in remote areas such as the Himalayas. This data should enable warning of floods to be available much earlier than hitherto and also enable more accurate estimates to be made of flow into reservoirs and rivers.

13.92. For the Plan 1978—83, a provision of Rs. 107 crores including provision for spacesegment of INSAT programme has been made compared to an outlay of Rs. 39.58 crores in the Fifth Five Year Plan. The break-up of the outlay is as follows :

Table 13.9 : Outlay for Meteorology : 1978—83

Programme	Outlay (Rs. crores)	Remarks
(1)	(2)	(3)
(a) India-Meteorological Department		
Monex '79 . . .	13.92	
INSAT-I . . .	69.50	
Other schemes . .	19.08	(Includes Rs. 1 lakh token provision for special requirements for weather radars)
TOTAL	**102.50**	
(b) Autonomous Institutes .	4.50	
GRAND TOTAL . .	**107.00**	

13.93. The main thrust of the Plan 1978—83 will be on improvement of meteorological services to assist farmers, fishermen, aviation etc., on hydrometeorology for proper utilisation of water resources, improvement in meteorological telecommunication facilities, strengthening of seismological network in the country, particularly in the Himalayan region, space meteorology, instrumentation etc. Besides, the Monex 1979 project and the INSAT which are the major programmes carried from Fifth Plan, there are also a few other spill over items the main amongst which relate

to installation of multi-met. radars for upgrading pilot balloon observatories and installation of cyclone warning radars.

13.94. The Institutes would continue to work on the ongoing schemes and also take up research projects in some new fields.

13.95. The Indian Institute of Astrophysics which builds its own telescopes and optics used by ISRO, Defence etc., would proceed with the work of the existing 2.36 M telescope and the improvement of accessories for the 102 cm. telescope.

13.96. The main thrust of the Indian Institute of Tropical Meteorology would be to initiate studies on the development of AGI generation and flares, investigation of the dynamics of large scale monsoon system and its disturbances, warm cloud electrification, cloud modelling etc.

13.97. The Indian Institute of Geo-Magnetism would, besides expanding research in applied aspects of geo-magnetism and sub-surface geology, take up studies on lunar geo-magnetic variations.

Monex 1979

13.98. Monex is a part of the Global Atmospheric Research Programme sponsored by the World Meteorological Organisation and the International Council of Scientific Unions and is designed at collecting observations over oceanic regions and land through collaborative efforts of a number of countries for a better understanding of the monsoon. As a build-up for Monex 79, Monsoon 77 Experiment was conducted in collaboration with Soviet scientists. The programme is expected to be completed in 1979-80 and a provision of Rs. 13.92 crores has been made for it in the Plan 1978—83.

Information Services, Plan Publicity and Broadcasting

13.99. The approach in the 1978—83 Plan in regard to Sound Broadcasting, T.V., and Information and Publicity is to give priority to schemes which can assist in promoting rural development as part of an integrated communication policy.

13.100. In 1978—83 Plan primary support would be for sound broadcasting as this medium is economical, wide spread in its coverage and socially acceptable. By the end of the First Plan there were 26 broadcasting centres which covered 46 per cent of the population and 31 per cent of the area. During the Second Plan the number of centres increased to 30 and the coverage by population to 55 per cent and by area to 37 per cent. In the Third Plan, there was a substantial increase in the number of medium wave transmitters which extended the coverage to 70 per cent of the population and 52 per cent of the area, with the number of centres increasing to 54. In the Fourth Plan, it was expected to extend the coverage to 90 per cent of the population which has now been achieved. The number of centres are 83. Throughout this period apart from programmes of a general nature devoted to entertainment and current affairs with urban orientation, there have also been experiments in radio rural forums, broadcasts for educational and agricultural purposes and programmes beamed to industrial and tribal communities. The interlinkages between the broadcasting services and the user agencies at the Central, State and local levels have, however, been minimal.

13.101. The major expansion in the area of TV was taken up during the Fourth Plan period. This expansion continued during the Fifth Plan when the SITE Programme was conducted in selected rural areas. By the end of the Fifth Plan there were seven urban transmitters and five transmitters under the SITE programme ; two more SITE transmitters would have been added at the end of 1977-78. The TV programmes, by and large, have had an urban orientation. SITE represented a major effort in rural TV communication and demonstrated the technical practicability of the programmes. It showed however that more work is needed to achieve the required quality of software, its relevance to local needs and development of inter-linkages between TV, other mass media and the prime users. In view of the very large levels of outlay, that a large rural oriented TV system will require, it has been felt that a one year period was too short to assess its impact on rural development. It has, therefore, been decided to continue the rural transmissions in SITE villages for a further period of three years.

13.102. The Films Division starting with a production of only about 30 documentaries per year in the First and Second Plans increased to 95 documentaries per year in the Third Plan. The present production figure is about 150 documentaries per year in addition to 52 editions each of national and regional newsreels. These films are produced with 35 mm technology and subsequently reduced to 16 mm and then dubbed into 16 languages for the all India circuits. The 16 mm films are exhibited in rural areas through the mobile vans of the Directorate of Field Publicity and the various State Governments.

13.103. Till the First Plan the Press Information Bureau was the only information service in existence. During the First Plan the Field Publicity unit and the Directorate of Advertising and Visual Publicity were started. At present, there are 221 Field Publicity Units in the country. The integration of these field units with the developmental activity in these areas requires to be strengthened. There is also no well conceived integrated plan for publicity making the optimal conjunctive use of the various media.

Sound Broadcasting

13.104. The provision of Rs. 38.40 crores in the Fifth Plan was mainly to complete the work on spill-over schemes for which Rs. 32.52 crores were earmarked. During this Plan it is proposed to give special attention to radio as a means of supporting the programme of rural development for which a substantial step-up in outlay has been provided. In addition to upgrading the power of some medium wave transmitters the main thrust will be on strengthening the sound broadcasting service to semi-urban and rural areas. For this purpose emphasis will be laid on improving the quality of software and also on starting some pilot projects for broadcasting at the district level

for rural audiences. Greater attention will be paid to increasing the interaction with the concerned Ministries and field agencies of the Central and State Governments so that radio forms a part of an integrated communication programme including a sound feed back system. The possibility of activising rural community listening programmes and charchamandals in order to develop close links between the services to rural areas and the audience will be examined as a part of the support to the integrated rural development programme. Steps to strengthen certain existing stations to minimise the erosion of coverage as a result of powerful neighbouring stations will be taken up.

13.105. A provision of Rs. 86.50 crores has been made for radio including Rs. 33.53 crores for spill-over works and Rs. 52.97 crores for new schemes.

Television

13.106. In the Fifth Plan the outlay tor T.V. was Rs. 50.98 crores which included Rs. 33.41 crores for continuing schemes of the Fourth Plan. The major new scheme was for setting up six transmitters at Jaipur, Hyderabad, Raipur, Gulbarga, Sambalpur and Muzaffarpur for rural viewers. The last two transmitters would have come up by March, 1978.

13.107. Until the ongoing programme for rural TV has been fully evaluated and its cost effectiveness as a channel for rural development established no major expansion of rural TV is envisaged in the Plan 1978—83. Therefore, apart from making adequate provision for ongoing schemes, only a modest expansion of new TV stations including those for border coverage has been proposed. For the time being, INSAT will be used as a means of networking both TV and radio stations as well as replacing and supplementing existing telecommunication links.

13.108. Rs. 50.00 crores have been provided for Television which includes Rs. 18.01 crores for spill-over schemes and Rs. 31.99 crores for new schemes.

Information and Publicity

13.109. In the Plan 1978—83 the attempt will be to reduce the multiplicity of groups engaged in publicity work and integrating them closely with the Field Publicity Units. These Units will work in a decentralised manner in rural areas in close collaboration with the State Governments. The outlay provided in the Plan is Rs. 6.40 crores.

13.110. As regards films the main strategy in 1978—83 Plan will be to shift the thrust from making films for the All India circuit in 16 languages to decentralised film making as support to extension activity. For this purpose infrastructure of new low cost technologies like 16 mm will be expanded and pilot experiments with super 8 films will be conducted. The strategy regarding the content and periodicity of the news reviews is being re-examined. The outlay provided in the Plan is Rs. 17.10 crores.

13.111. The Plan has made a total provision of Rs. 46.50 crores for Information Services and Plan Publicity. Out of this an outlay of Rs. 23.50 crores is for the Centre and Rs. 23.00 crores for the States and Union Territories. These provisions are in addition to the provision for publicity under the programmes of a few other Departments like Health, Agriculture and Tourism.

13.112. The subsectorwise break-up of the outlays for the Fifth Plan 1974—79 and the Plan 1978—83 is shown in the table below :

Table 13.10 : Outlay for Transport and Communications

(Rs. crores)

Sl. No.	Item	Fifth Plan 1974-79	Plan 1978-83
(0)	(1)	(2)	(3)
1.	Railways	2202	3350[1]
2.	Roads	1354	2183
3.	Road Transport	461	740[2]
4.	Ports		
	(i) Major Ports	521	390
	(ii) Minor Ports	50	72
	(iii) Lighthouses	14	16
5.	Inland Water Transport	32	43
6.	Shipping	450[2]	637[2]
7.	Communications	1267	2095
8.	Civil Aviation	297	700
9.	Tourism	75	109
10.	Meteorology	40	107
11.	Information and Broadcasting	122	183
	TOTAL	**6885**	**10625**
12.	Farakka Barrage	32	..
	GRAND TOTAL	**6917**	**10625**

[1] Includes Rs. 80 crores for contribution to State Road Transport Corporations.

[2] Includes Rs. 372 crores of internal resources.

[3] Excludes provision under SAFAUNS.

Chapter 14

Education

The educational system has recorded, over the years, a phenomenal growth. At the beginning of the Fifth Five Year plan, the total number of schools and colleges had increased to 5.72 lakhs from 2.31 lakhs in 1950-51 ; the corresponding increase in enrolment was from 273 lakhs to 876 lakhs. The total government expenditure on education in 1973-74 was Rs. 1311 crores or more than eighteen times as compared to 1950-51 (Annexure I). In terms of proportion of children of the age-group 6—14, for whom educational facilities were available, the progress achieved is indicated below :

Classes/Age-groups	Enrolment (in lakhs)		Percentage of the Population in the age-group	
	1950-51	1973-74	1950-51	1973-74
(1)	(2)	(3)	(4)	(5)
I—V/6—11 .	192	641	43	84
VI—VIII/11—14 .	31	153	13	36
I—VIII/6—14 .	223	794	32	67

Notwithstanding the educational investments made, we have yet to achieve the goal of universalisation of elementary education and the complete eradication of illiteracy.

The Policy Frame

14.2. The proposals for the development of education during the Plan have been based on six major changes of policy :

(i) The programmes of adult education, including the eradication of adult illiteracy, have been neglected in the post-independence period and have generally received less than one per cent of the total educational expenditure. In view of their significance, it is now proposed to accord them high priority. An attempt will be made to develop a nation-wide and large-scale programme of adult education with special emphasis on illiterates in the age-group 15—35, and as much as 10 per cent of the total educational outlay in the Plan will be earmarked for this programme.

(ii) A far greater priority will be given to the programme of universalizing elementary education in the age-group 6—14 which will be assigned about half the total allocation for education in the Plan period. Several major reforms will be introduced with the object of increasing the unsefulness of the earlier programmes which had large drop-out rates and were known for their ineffectiveness and inefficiency. There will be special emphasis on the enrolment of girls and the children of weaker sections of the community such as scheduled castes, scheduled tribes and landless agricultural labourers.

(iii) So far, quantitative expansion of secondary and higher education has received a greater priority and a larger allocation of funds. It is proposed to regulate enrolments in the general academic streams of higher secondary and higher education, to keep down the expansion of facilities at these stages to the minimum, and to shift the emphasis to vocationalization at the secondary stage and to the improvement of quality in secondary stage and higher education.

(iv) The non-plan government expenditure on education has now become very large. It has registered an annual growth rate of 12 per cent during the last ten years and it is estimated to be of the order of Rs. 2245 crores in 1978-79. It is proposed to have an integrated look at Plan and non-Plan provisions and devise concrete measures for a better and more effective utilisation of this investment for meeting development goals.

(v) The implementation of educational programmes has been far from optimal in the past. Concrete and vigorous steps will, therefore, be taken to improve the quality of implementation, especially in States where universalisation of elementary education has made less headway and the prevalence of illiteracy among adults is large.

(vi) Measures are also proposed to ensure a rural bias in the educational programmes, to develop science education and a scientific attitude and to provide a system of non-formal education and training at all stages.

Elementary Education

14.3. The additional enrolment in elementary education during the four years of the Fifth Plan was 106 lakhs (72 lakhs in classes I-V and 34 lakhs in classes VI-VIII) and the levels of enrolment reached were 85 per cent in the age-group 6—11, 40 per cent in the age-group 11—14 and 69 per cent in the age-group 6—14. The details will be found in Annexure II.

14.4. It is now proposed to accelerate the pace of expansion considerably and to fulfil the directive of Article 45 of the Constitution in about ten years. From this point of view, the following new strategy is proposed to be adopted :

(i) The emphasis so far has been on mere 'enrolment' in classes I—V and VI—VIII. This has concealed inflated enrolments and large drop-out rates of about 60 per cent between classes I—V and 75 per cent between classes I—VIII. It is, therefore, proposed to lay down 'average attendance' in addition to 'enrolment' as a more legitimate basis for the assessment of progress or provision of teachers and to prescribe specific targets for annual enrolments in class I, class V and class VIII. Special efforts would also be made for reduction of wastage and for monitoring of programmes for that purpose.

(ii) All urban areas have facilities for elementary education. In rural areas 80 per cent of habitations having 93 per cent of the total rural population have a primary school within 1.5 kilometres and over 60 per cent of habitations having 72 per cent of the total rural population have a middle school within 3 kilometres. Careful plans will be prepared for location of new primary and middle schools and all the new institutions required will be opened on a priority basis during the Plan period.

(iii) The only strategy adopted so far to universalize elementary education is to enrol additional children in class I (all these are expected to attend on a full-time basis) at the beginning of each school year. This strategy will be continued and expanded. Every primary school will be expected to prepare census of all children in the age group 6-7 and enrol as many of them as possible in the beginning of each school year through specially organized enrolment drives. It is thus hoped that by the end of the plan period, non-enrolment of young children in class I will almost be eliminated.

(iv) The present system of single-point entry and exclusively full-time education has two serious weaknesses; it gives no opportunity to grown-up children to join school if they desire to do so, and it leads to large rates of drop-out because grown up children who have to work are left with no option but to discontinue education. It is, therefore, proposed to introduce two major reforms :—

(a) A multiple-entry system will be adopted and special condensed courses of non-formal education will be organised for grown-up children in the age-group 9—14 who have never been to school or dropped out so early as to become illiterate again. Special emphasis will be laid on programmes for children in the age group 11—14. It has been the experience that these children can be taken to the level of class V in 12—24 months.

(b) A system of part-time, non-formal continuation education will be designed for children who enter the primary school but drop-out later, generally in the age-group 9—14. The rule will be that every child in the age-group 6—14 shall attend school, on a full-time basis if possible, and on a part-time basis, if necessary for those who cannot, mainly for economic reasons, attend full-time education. This will reduce drop-outs and wastage very greatly.

It is expected that, as a result of the programmes mentioned above the enrolments in elementary education during the Plan will increase by 320 lakhs (220 lakhs in classes I--V and 100 lakhs in classes VI—VIII). The details are given in Annexure III. A very large proportion of these would be in part time non-formal education. The enrolment increase would mean educational facilities for 110 per cent of the children in the age-group 6—11, 57 per cent of the children in the age-group 11—14, and 90 per cent of the children in the age-group 6—14 by 1982-83.

(v) The vast bulk of the non- attending children at present consists of girls, children of scheduled castes and tribes and children of other weaker sections like landless agricultural labourers. Special efforts will be made to enrol them. These will include: appointment of more women teachers, free supply of text-books or even clothing where necessary, provision of mid-day meals where necesary and possible under the revised minimum needs programme, establishment of ashram schools especially for tribal children and children in sparsely populated areas, intensive educational propaganda among the people, setting up separate targets for the enrolment of girls and children of scheduled castes and schedulde tribes and so on. The imbalances of development between boys and girls and different social strata will thus be greatly reduced.

(vi) An attempt will also be made to reduce imbalances in regoinal development. Every State will be requested to ensure that special efforts are made to rapidly identify backward areas and to promote expansion of elcmentry education therein.

(vii) Educational research related to problems of taking education to section which have so far been by-passed is a neglected area. Action-oriented educational research and experimental projects of intensive educational development as part of integrated area development programmes will, therefore, be given special encouragement and support.

(viii) The expansion visualized in the programme is unprecedented, whether considered in absolute figures or in terms of percentage increase. It has also to be in areas and for population groups which constitute the hard core of the poor and the backward in the country. It will, therefore, need great organizational effort and administrative support. The campaigns of adult education that are being simultaneously organized will be of help in this task. Attempts wil also be made to organize a mass movement of parental education to support this programme. The elementtary school teachers will have to play a vital role and their services may be utilised not only for teaching the children who come to school but also to bring non-attending children to school and to see that they do not drop out. The supervising machinery will be adequately strengthened and the help of other government departments will be enlisted.

14.5 Programmes of qualitative improvement in elementary education help the programmes of expansion by enhancing the attracting and holding power of schools. It is, therefore, proposed to emphasize and to allocate adequate funds for several programmes of qualitative improvement such as introduction of socially useful productive work, curricular reform so as to link education to the environment and to make it relevant and interesting to children, relating school vacations to climatic and agricultural conditions, provision of equipment and provision of cheap but effectively useful buildings constructed, as far as possible, out of local materials by local communities, improvement in the quality of school books, adoption of dynamic methods, of teaching and evaluation, emphasis on better teaching of the basic subjects of language, arithmetic and science, creation of a scientific awareness and inculcating a scientific attitude, better pre-service and in-service education of teachers and improvement of supervision.

14.6 Clearly, so large and unprecendented an effort will need a much greater investment than in any earlier Plan. This demand is proposed to be met through three-pronged drive of economy in unit costs, more effective utilization of existing resources, and increased allocation.

(a) Unit costs in elementary education will be considerably reduced because of the adoption of the programmes of part-time and non-formal education. They would also be reduced through the adoption of the double-shift system, at least for classes I and II.

(b) There is an ineffective use of available resources at present because of overlapping and duplication involved in bad location of elementary schools and irrational posting of teachers. There is evidence to show that in many areas existing facilities are grossly underutilized. A sustained and intensive effort is needed to correct these deficiencies. This will make it possible to increase the enrolments without proportionate additional staff.

(c) The allocations to elementary education also need to be substantially increased. In the Plan it is proposed to allocate Rs. 900 crores, or nearly 50 per cent of the total allocation, to elementary education (which is roughly about three times that during 1974—78).

Adult Education

14.7 The existing programmes of adult education viz., (1) the farmers' functional literacy project for rural areas, (2) the Shramik Vidyapeeths and polyvalent adult education centres for urban areas, (3) adult education departments in universities, (4) the Nehru Yuvak Kendras, (5) National Service Scheme, and (6) assistance to voluntary organisations for adult education will be continued, improved and expanded where necessary. But the main feature of the Plan is the proposal to mobilise all these efforts and organize a very large, intensive and nation-wide programme of adult education, with special emphasis on the age-group 15—35. Whereas in the past the total number of adults made literate every year was about 5 lakhs, it is now proposed that programmes of adult education and literacy in the Plan will cover about 650 lakhs in total, 15 lakhs in the first year, 45 lakhs in the second, 90 lakhs in the third, 180 lakhs in the fourth and 320 lakhs in the fifth and final year.

14.8 It is obvious that an immense organizational and financial effort is needed to implement such a colossal programme. Some of the salient aspects of this effort have been indicated below :—

(i) The main target group of the programme is the illiterate and unorganized people in rural and urban areas who are most exploited and weak and generally live below the poverty line. Even among these, special emphasis will be laid on those who are in the age-group 15—35. Women among whom illitercy rate is very high, scheduled castes and tribes, landless agricultural labourers and other weaker sections of the community will naturally receive special attention.

(ii) While literacy has a special place of its own in this programme, meant essentially for the poor illiterate people, its principal objective is to increase the awareness of these people about themselves and about the social reality around them, to organize them, to assist them to understand and strive to solve the different problems in their day-to-day life and to involve them in meaningful and challenging tasks of social and national development. Besides literacy, the main elements of the programme will, therefore, include an appropriate 'mix' suited to the needs and interests of the individual, of such themes as general education including citizenship training, health education and family planning upgrading of vocational skills, deeper understanding of science and technology in day-to-day life and physical education and cultural activities.

(iii) The success of the programme will depend upon stimulating the motivation of adults, proper selection and training of workers, preparation of good learning materials, adoption of dynamic methods of learning through doing and living, organisation of a mass movement, and provision of adequate supervision and guidance. These aspects will, therefore, be given adequate attention in the Plan.

(iv) In developing the programme, full utilization will be made of voluntary agencies, young persons, interested in social service, institutions and organisations engaged in economic or other activities but interested in adult education, workers' organizations, retired teachers or other personnel and in fact, of the immense and valuable educational resources outside the formal system of education which can be advantageously harnessed to programmes of adult education. The workers within the formal system of education—teachers and students—will be utilized on a selective basis. Wherever possible, programmes of adult education will be linked to those of development.

(v) Such a programme can only be organized on a highly decentralized basis. A National Board of Adult Education has been established at the Centre to guide the programme. Suitable agencies will also be set up with similar objectives at the State, district, block and local community levels.

14.9 The first year of the programme will be mainly preparatory. Some of the measures are : programme-planning in consultation with all agencies as envisaged and extended to district/block levels, identification and mobilisation of voluntary young workers, ex-servicemen and other agencies at the field level, creation of a suitable environment including pre-conditions for initial motivation and sustained participation of adult learners, establishment of resources centres in all regions, preparation of curriculum and teaching/learning materials on the basis of identified needs of learners, development of methods and materials for training, as well as training of instructional personnel at the district and project levels. The basic sub-structure of the needed machinery for this national campaign will also be created during this period.

14.10 An important aspect of the programme being developed is that it will go far beyond the traditional boundaries of the Education Department. In fact, this programme will have to be regarded as a collaborative effort in which all Central and State agencies, industry, employers, organisations of workers, etc. will have to play an important role. Another equally important aspect is that area-specific and group-specific plans closely linked to development, will be carefully prepared for implementation, with adequate provision for the administrative, supporting and supervising machinery.

14.11 The total allocation proposed for the programme is Rs. 200 crores or 10 per cent of the total educational plan outlay as against Rs. 18 crores or about 1 per cent. of the educational financial outlay in the Fifth Plan. It needs to be pointed out, however, that this is only one source of funds for the programmes of adult education in the Plan in which multiple agencies are expected to participate and which will, therefore, be funded from multiple sources. For instance, the different employer-groups and project authorities might fully finance their adult education activities. The needs of tribal areas and groups may be met from outlays of tribal sub-plans. The Plan outlay for rural development and agriculture could like-wise include provisions for the farmers' literacy projects. The outlay shown under education may therefore, be only a part of the total provision available for adult education during the next five years. This will be stepped up if necessary on the basis of the experience gained in the year to year implementation of the programmes.

Secondary Education

14.12 The development of secondary education has generally been in the form of an expansion of facilities. Even this has generally been haphazard and unplanned resulting in overlap, duplication, and creation of a large number of institutions whose location is badly planned and which are uneconomic and academically non-viable. The main thrust of the programmes included in the Plan, therefore, is to emphasise qualitative improvement, vocationalization and to restrain expansion.

14.13 While establishment of some new secondary schools may be inevitable especially in backward areas, the general policy to be adopted is to discourage the indiscriminate opening of many new secondary schools. The emphasis would be on the rationalization and consolidation of existing schools. The attempt to introduce the uniform pattern of school and college classes will be continued and the several problems thrown up in its implementation will be carefully sorted out.

14.14 It is anticipated that the additional enrolment in secondary education during the Plan may be about 30 lakhs, which is almost equal to the expansion envisaged in the Fifth Plan, 1974—79. Most of this demand should be met, not by establishing new schools, but by better and more efficient utilization of the existing secondary schools. In addition, programmes of non-formal education, such as correspondence courses will be fully encouraged.

14.15 Emphasis will be placed on quality improvement. There are several programmes which, while not requiring large finances, nevertheless would help lay foundation for sustained improvement. Programmes proposed to be developed for this purpose will include, introduction of socially useful productive work, better teaching of languages (as means of communication), mathematics and science (with the provision of low cost laboratories), involvement of students in social service, including literacy work and adult education, faculty improvement including improved training of teachers, and creating an ethos of work and dedication in the system.

14.16 An equal if not greater emphasis will have to be placed on vocationalization with the object of making secondary education employment-oriented and directly useful for the students. Detailed guidelines for this purpose are being drawn up by a working group set up by the Ministry of Education. Vocational courses to be provided at various levels will be of a more substantial order than in the Fifth Plan but still be experimental in nature and would be dovetailed with the programmes of rural development.

14.17 It is necessary that existing training facilities, which have already been created in the Industrial Training Institutes, Polytechnics, Agricultural Polytechnics, para-medical schools and other vocational training institutions are fully utilised and diversified before new training programmes are established. The requirements of new training programmes need to be identified on the basis of intensive surveys of specific localities. Considering that the organised sector may not provide sufficient avenues of employment for all the products of vocational courses, it will be necessary to identify avenues of self-employment for which skill training can be organized for secondary school students. This will be particularly necessary in rural areas where the new investments visualized might open avenues for gainful employment.

14.18 The present system of public (and similar) schools run by private bodies and charging high fees which restrict them to the children of affluent sections is inconsistent with an egalitarian society. There is need for government to take steps to enable the poor talented children to join such schools and also to persuade existing institutions of this kind to admit

and provide freeships to a substantial number of students from among the talented but economically handicapped.

14.19 The total allocation for secondary education in the Plan is Rs. 300 crores. This provision needs to be supplemented by additional resources from other sources. For instance, the practice of charging development fees, adopted by some States for the provision and strengthening of work experience, teaching of science, provision of school buildings and teaching equipment, should become universal. Support from local communities in cash and kind will also be encouraged on a wider scale than is being done at present. In the same way, the tendency to take over complete financial liability of privately-managed institutions needs to be reversed and the trend towards the general abolition of fees at the secondary stage needs to be halted. While liberal provision can be made for scholarships and fellowships with a view to safeguarding the educational interests of the under privileged sections and meritorious students without means, fees in secondary schools need to be charged at rates which bear a reasonable relationship with the cost of providing education.

General Higher Education

14.20 There has been an unplanned and rapid expansion of general higher education in the first four plans. In the Fifth Plan, the rate of growth of general higher education declined to some extent partly as a result of a deliberate policy to regulate enrolments and partly due to the adoption of the new pattern of higher secondary education. This is a welcome development and its gains will be consolidated in the new Plan.

14.21 No new universities are provided for in the Plan, 1978—83, if colleges are to be set up, they would be established with great restraint, only after ensuring adequate resources in terms of teachers, finances and materials. Steps will have to be taken to rationalize existing institutions with a view to encouraging different colleges to concentrate programmes in a few subjects or subject combinations in which they could have academically viable teaching units, there will be rigorous control over the starting of additional courses in existing institutions.

14.22 The policy regarding fees which has been suggested above for secondary education is even more relevant and necessary for higher education. This will act as a further curb on expansion. Two precautions are, however, needed in the rigorous pursuit of this policy : (a) care should be taken to see that the access of the weaker sections of the community to higher education, which is probably their almost exclusive channel to vertical mobility, is increased, rather than decreased, and (b) non-formal programmes of higher education should be encouraged so that the opportunity for higher education is available to all, who are qualified for it and are ready to receive it without being a drain on the public exchequer. All universities will be persuaded to open their examinations to private candidates and encourage self-study.

14.23 The main emphasis in the Plan will, therefore, be on qualitative improvement. A broad policy frame for this has recently been prepared by the University Grants Commission which will be assisted to implement it. The major programmes included in the Plan are :

(i) Access to higher education will be linked to talent and aptitude, admission to full-time institutions of higher learning at the first degree and post-graduate levels will be selective, based on merit but with reservation of an adequate number of seats for the weaker sections.

(ii) The under-graduate and post-graduate courses will be restructured to make them more meaningful and relevant to the students and the society alike. There will be extensive diversification of courses and modernization of physical facilities as well as of the educational methodologies. More stress will be laid on science education and on interdisciplinary activities. Courses of study, research and extension services which have bearing upon rural development, adult education and other priority programmes will be given special attention.

(iii) The Indian languages will be adopted as media of instructions at the under-graduate stage. The production of books in Indian languages will be expedited. Side by side, steps will be taken to provide facilities for students to acquire a good working knowlegde of English and other foreign languages so that they have direct access to the growing knowledge in the world.

(iv) There has to be considerable decentralization of authority from the university to the departments and to the affiliated colleges. The programme of autonoumous colleges will be vigorously pursued.

(v) The UGC assistance to colleges will be increasingly devoted to the improvement of academic standards in colleges on a selective basis. The grants-in-aid from State Governments to affiliated colleges need to be rationalised and effectively used as instruments for qualitative improvement.

(vi) Extension programmes will form an integral part of higher education along with teaching and research. These will cover not only the improvement of other sub-sectors of education but also, as outlined in the Chapter on Science and Technology, service to the local community.

(vii) Post-graduate courses and research will be concentrated largely in university departments, their location, scope and areas of stress would be so planned that fewer centres of better quality are set up in different subjects rather than proliferating centres in the same subject field within the States.

(viii) Faucuty improvement will continue to receive emphasis and attention.

(ix) Research, both fundamental and applied, will continue to be promoted. Programmes of support for research, both basic and applied, by individuals, groups and departments will be strengthened, so as to help the emergence and growth of strong schools of research in the university system.

14.24. The provision in the Plan, 1978—83, for general higher education is Rs. 265 crores. The reduction in the proportion of funds allocated to this sub-sector reflects the much higher priority attached to adult and elementary education. It is, therefore, essential to exercise the greatest restraint on expansion, make efforts to raise internal resources through a discriminate use of fees including a differential structure and review all existing programmes.

Technical Education

14.25. The overall situation here is different. Technical education, for instance, has grown mainly in relation to assessed future demand for manpower and has been largely responsible for the development of the modern industrial sector. But owing to increased output and a slack in the industry, the economy was not able to absorb all the products of the system which has an inbuilt capacity of annual intake of 25,000 students for degree courses and 50,000 students for diploma courses in different branches of engineering and technology. According to the present available estimates of additional requirements of engineering manpower for the next ten years, the existing facilities are considered adequate, no provision is, therefore, included for the setting up of any new engineering colleges or polytechnics or for expansion of facilities beyond the capacity already approved. Changes in manpower demand in different specialities will be met by appropriate shifts in discipline-wise intake within the overall capacity of the system.

14.26. It is necessary to review the assessment made of the long-term requirements of engineering manpower, from time to time, State-wise and speciality-wise, and, taking into account the lead time involved, to specify the educational efforts currently needed in that context. In order to undertake such an assessment as part of the annual review of technical education perspectives, it is proposed to set up a technical manpower information system.

14.27. The emphasis in the Plan will thus be on consolidation and qualitative improvement. The Plan provides for a phased programme of removal of obsolescence and modernisation of facilities on the basis of redesign of laboratory and workshop practice and of modernization and diversification of courses with greater flexibility especially with reference to the needs of rural development, reduction of wastage, and integration of curriculum development with laboratory work-planning.

14.28 Provision has been made in the Plan for completing the on-going programmes of consolidation and improvement of facilities in existing institutions according to approved schemes. The five centres of advanced study and research in energy studies, material sciences, cryogenics, ocean engineering and resources survey would be fully established. Their future activities would mainly be to undertake research in identified fields in accordance with the National Plan of Science and Technology, specific projects as well as financial support for such research would have to be made available by sponsoring agencies in the Government departments and public sector/private industry. The programme of post-graduate courses and research in engineering and technology will be stabilised at the current level, more emphasis will be given to sponsored research work to be assigned and funded by the user agencies, to technical extension services by the faculty and students and to faculty development programmes.

14.29 The technical education system represents a national resource of science and technology with specialised laboratories, sophisticated instrumentation facilities and, more importantly, teams of highly qualified scientific and engineering personnel on their faculty. These internal resources should be utilised not merely towards technological self-reliance but also to bring about progressive improvement in the quality of technical education. In this context, it should be examined whether a system of domestic technical assistance programme could not be formulated by pooling resources and facilities of selected institutions for the benefit of the developing ones.

Other Programmes and Art and Culture

14.30 The Plan provides for the continuation of the on-going programmes in the fields of physical education, games and sports, language development, scholarships and art and culture. Keeping in view the resources constraint and the priorities for the massive programmes of elementary education and adult education, it may not be possible to include any new programmes or allow substantial expansion of the existing ones. In the field of culture, special attention will have to be given to schemes relating to the preservation and conservation of our cultural heritage, particularly monuments, repositories of manuscripts and art objects. The awareness of the cultural heritage will be developed among the students through curricular and co-curricular programmes.

Implementation

14.31 The distribution of the total financial outlay of Rs. 1955 crores in the different sub-sectors is given in Annexure IV. This is exclusive of the non-plan provision which, as stated earlier, is likely to be Rs. 2245 crores in 1978-79.

14.32 The major progrmmes included in the Plan are largely different from those included in the earlier plans and will need, more importantly than financial outlays, special efforts for their implementation. Their main aspect is that they emphasize essential human inputs without which it will not be possible to transform the educational system and which have generally been under-played in the past. On the academic side, these will include an emphasis on improving the ethos of the system through the combined efforts of teachers, students, administrators and government, adoption of a policy of decentralization and

diversification, encouragement of innovations and experimentation through devolution of autonomy, emphasis on the development of non-formal programmes of education at all stages, restructuring and revision of courses at all stages to make them significant and relevant and adoption of improved methods of teaching and evaluation (including the introduction of work experience and social service programmes, better teaching of science, languages and mathematics and the use of Indian languages as media of instruction at the under graduate stage). On the managerial and administrative side, it will include an intensive effort to work with all the different departments of government, harnessing the services of industry, organisation of employers and workers and voluntary organizations, close involvement of the people and raising community support and resources. The educational agencies will have to function differently to meet the challenges of the new programmes and educational institutions will have to be assisted and encouraged to function in close contact with the community and in mutually supporting groups rather than in atomized isolation from one another and from the community. The programmes of adult and universal elementary education will also include the organization of a mass movement to promote proper attitudes to strengthen voluntary effort and to create and sustain motivation. On the financial side, the earlier emphasis on the best and the most economical use of plan funds will continue. But special efforts will be needed to make a more effective use of non-plan resources and to reduce unit costs. Special administrative and promotive efforts will be needed in the less advanced States to help them to meet their challenges and problems and these will receive emphasis, attention and support.

14.33 The Plan emphasises the need for equalisation of educational opportunities at all levels especially for the children of the weaker sections of the society, it provides for universalisation of elementary education, greater access of these students to higher education, etc. In this context, the aim will be to see that these children are helped to avail themselves fully of the educational facilities earmarked for them in the different institutions, through measures like special remedial coaching/courses and personalised guidance services.

14.34 The successful implementation of these programmes also requires that the hard decisions now taken about high priorities to elementary and adult education, control of expansion in secondary and higher education, non-increase in the hidden subsidies to well-to-do and urban sections, if not an actual reduction therein, and for optimum redeployment of non-plan provisions in support of development goals will continue to be adhered to throughout the plan period.

ANNEXURE I

Educational Development 1950-51—1973-74

(1)	1950-51 (2)	1960-61 (3)	1970-71 (4)	1973-74 (5)
A. Institutions (Number)				
(i) Primary	209,671	330,399	404,418	429,888
(ii) Middle	13,596	49,663	88,567	97,356
(iii) High/Higher Secondary	7,288	17,257	35,773	40,127
(iv) Colleges :				
(a) Arts, Science and Commerce	548	1,161	2,587	3,126
(b) Professional	147	381	1,017	1,182
(v) Universities and deemed Institutions	28	44	93	104
B. Enrolment by Stages (In '000) :				
(i) Primary	18,678	33,631	59,252	63,193
(ii) Middle	3,330	7,480	13,399	14,689
(iii) Secondary	1,481	3,463	7,167	7,475
(iv) University	174	557	1,954	2,234
C. Government Expenditure : (Rs. in crores)				
(i) Total	71	234	846	1,311
(ii) Plan	20	90	115	225
(iii) Non-Plan	51	144	731	1,086

ANNEXURE II

Student Enrolment in Classes I—VIII

Sl. No.	Age-Group/Classes	1973-74 (Position)		1977-78 (Position)		Additional Enrolment 1974—78 (Col. 4—Co . 2)
		Enrolment	% age to age-group	Enrolment	% age to age-group	
(0)	(1)	(2)	(3)	(4)	(5)	(6)
						(In lakhs)
1.	6—11/I—V					
	Boys	398	101	433	101	35
	Girls	243	66	280	68	37
	TOTAL	**641**	**84**	713	**85**	72
2.	11—14/VI—VIII					
	Boys	107	48	127	51	20
	Girls	46	22	60	27	14
	TOTAL	**153**	**36**	**187**	**40**	34
3.	6—14/I—VIII					
	Boys	505	82	560	83	55
	Girls	289	50	340	54	51
	TOTAL	**794**	**67**	**900**	**69**	**106**

Enrolment Targets for 1978—83

Classes/ Age-groups	1977-78 (Position)	1978—83 (Additional)	1982-83 (Likely Position
(1)	(2)	(3)	(4)
A. Enrolment (In lakhs)			
(i) I—V	713	220[1]	933
(ii) VI—VIII	187	100[2]	287
(iii) I—VIII	900	320[3]	1220
B. Enrolment as percentage of Age-Group Population			
(i) 6—11	85	..	110
(ii) 11—14	40	..	57
(iii) 6—14	69	..	90

Enrolment in Part-time classes :

[1] 120 lakhs

[2] 40 lakhs

[3] 160 lakhs

ANNEXURE IV

Outlay for Education 1978—83

Sl. No.	Sub-head	Fifth Plan 1974—79	Anticipated Expenditure 1974—78	Plan 1978—83
(0)	(1)	(2)	(3)	(4)
				(Rs. crores)
1.	Elementary Education	410 (32)	317 (35)	900 (46)
2.	Adult Education	18 (1)	9 (1)	200 (10)
3.	Secondary Education	250 (19)	156 (17)	300 (15)
4.	University Education	292 (23)	205 (22)	265 (14)
5.	Other Programmes	122 (9)	90 (10)	90 (5)
	SUB-TOTAL—GENERAL EDUCATION	**1092** (85)	**777** (85)	**1755** (90)
6.	ART & CULTURE	**37** (3)	**28** (3)	**50** (3)
7.	TECHNICAL EDUCATION	**156** (12)	**107** (12)	**150** (7)
	TOTAL EDUCATION	**1285** (100)	**912** (100)	**1955** (100)

NOTE :—Figures in parentheses indicate percentage outlay to the total outlay on Education.

Chapter 15
Health and Family Welfare

Health

A Policy Frame

15.1 The directions and guidance provided by the Health Survey and Development Committee (Bhore Committee : 1946) and the Health Survey and Planning Committee (Mudaliar Committee : 1961) have provided the chief basis of health planning in India. The objectives of health programmes during the first four Five Year Plans were (i) control/eradication of major communicable diseases, (ii) provision of curative, preventive and promotional health services, (iii) augmentation of training programmes of medical and para-medical personnel; and (iv) strengthening the primary health centre complex for undertaking preventive and curative health services in rural areas. The Fifth Plan tried to provide minimum public health facilities integrated with family welfare and nutrition for vulnerable groups—children, pregnant women and nursing mothers. The accent of the schemes during the period has been on (i) increasing the accessibility of health services to rural areas, (ii) intensification of the control and eradication of communicable diseases, especially small-pox, malaria, leprosy, (iii) qualitative improvement in education and training of health personnel, and (iv) attempts to develop referral services by providing specialists' attention to common diseases in rural areas. Unfortunately, the achievements during the plan period fell short of the targets, especially in the minimum needs programme whose objective was to create adequate infrastructure and health care services in rural areas. The details of the targets set and likely achievements by 1977-78 are given in Annexure I.

15.2 In recent years, there has been considerable re-thinking on the social, technological and philosophical basis of the development of health services in the country. There is serious dissatisfaction with the existing model of medical and health care services with its emphasis on hospitals, specialities and super-specialities and highly trained doctors which gets limited in practice mostly to urban areas and which is availed of mainly by the well-to-do classes. It is also realized that it is this model which is depriving the rural areas and the poor people of the benefits of good health and medical services. Serious doubts have, therefore, been raised as to whether we did right in adopting this western model of medical services and health care whose costs go far beyond our resources, which emphasizes curative rather than preventive and promotional aspects and which creates immense problems because of over emphasis on inappropriately high level professionalisation, institutionalization and centralization. A search for alternative models has, therefore, been on for some time and excellent results have been obtained in some refreshing experiments conducted by dedicated individuals and agencies. The Srivastava Committee was the first official committee to take this into account and to suggest a new approach to health care services which begins with the community and trained health workers from within the community itself and then links up these basic services within the community with an infrastructure of dispensaries and hospitals through a sound and well-organised referral system. This basic recommendation of the committee was immediately acted upon by the Government in October, 1977 and steps were initiated to augment the health care facilities in the rural areas through (i) scheme of transferring skills to workers selected by the community under the new Community Health Workers' Scheme, (ii) drawing up a scheme of involvement of medical colleges in the total health care of selected primary health centres with the objective of re-orienting medical education and making specialist services available to the rural public and (iii) accelerating reorientation training of unipurpose workers engaged in control of various communicable diseases programmes into multi-purpose workers so as to integrate the present vertical structure for control/eradication of communicable diseases.

15.3 It is proposed to give considerable attention to the development of an alternative model of health care services which will emphasize the preventive and promotive aspects, which will be fully geared to serve the rural areas and the poor people, which will visualize the development of a large band of health workers from among the community itself to take care of the common day-to-day ailments, which will make even the best medical aid available to every individual though a well-organised referral system and a chain of taluka, district and State hospitals, and whose costs will remain within the reach of our resources. It is hoped that a well-formulated and generally accepted programme of health and medical services will soon emerge out of these efforts, much before the end of the 1978-83 Plan itself.

15.4 Meanwhile it is proposed that the policies and programmes to be developed in the immediate future should be based on the following principles :

(i) The main objective in the Plan will be to provide better health care and medical care services to the rural areas and the poor people.

(ii) Vigorous steps will be taken to launch a community based programme of health care and medical services in rural areas, this being the most neglected sector needs priority.

(iii) No linear expansion of curative services in urban areas based on specialities and super-specialities will be permitted except in a few cases where the need for such expansion is justified on sound principles of need and priority.

15.5 No steps would be taken which would go counter to these basic objectives. A nation-wide debate will be initiated on the alternative models of health care and medical services through an appropriately designed machinery so that an economical, practicable and effective programme of such services can be prepared.

15.6 The programme of health and medical services included in the Plan for 1978—83 will have to be judged against the background of these basic criteria.

Rural Health

15.7 *Rural Health Scheme* : The most important recommendation of the Srivastava Committee was that primary health care should be provided within the community itself through specially trained health workers so that the health of the people is placed in the hands of the people themselves. This recommendation was accepted by the Government in October, 1977 and the programme of training health workers was initiated during 1977-78 in 777 selected primary health centres in the country which will cover all the 28 districts where the multi-purpose workers programme is complete in addition to one selected primary health centre in each district of remaining States/ Union Territories. A community health worker will be given training for a period of three months. He will be taught the fundamentals of health sciences, measures for maintaining health, hygiene, treatment of common infectious diseases, ailments, first-aid etc. He is expected to provide basic health care facilities in these fields to every village or community with a population of 1000 and to serve as a first informant of the health status of the community to the medical officer incharge of the primary health centre under the immediate guidance of multi-purpose health worker. He will also be imparted training in traditional systems of medicine popular in the areas of his care and yogic methods of maintaining physical fitness. The trained worker will be provided with a medical kit and an honorarium for the services rendered to the community on a part-time basis in addition to his/her normal avocations. It will be necessary to ensure updating the skills of the community health workers through periodic training.

15.8 It is proposed to extend this scheme widely and, after an evaluation of the experience gained in its implementation during the first two years, to cover all parts of the country and to provide one community health workers for each 1000 population as soon as possible. This will be one of the largest and best efforts made in the post-independence period to provide basic health and medical services in rural areas. It is expected that over a period of time the community would bear the cost of this programme.

15.9 *Medical Colleges Extension Services* : A limited scheme on an experimental basis was drawn up in 1977-78 with the object of entrusting each medical college in the country with the responsibility of providing preventive, promotive and curative health care services in three community development blocks adjoining the institution. This is to be provided through a well-knit referral services complex with the medical college functioning at the apex of the referral complex and the district/tehsil/taluk hospitals at the middle and primary health centres at peripheral levels. All the medical colleges will be brought under the scheme in the first two years of the Plan for providing improved health care facilities and simultaneously to ensure re-orientation of medical education.

15.10 *Other Programmes of Rural Health* : The other existing programmes for improving health care services in rural areas will receive emphasis, priority and larger allocations. For instance, under the Revised Minimum Needs Programme it is proposed to extend the physical infrastructure in the rural areas through establishment of additional sub-centres so as to achieve the norm of one sub-centre for 5000 population by 1987-88. The backlog of construction works pertaining to primary health centres, sub-centres and staff quarters would be adequately covered. All the primary health centres and sub-centres would be provided with larger supplies of drugs. The re-orientation training of the workers engaged in the control/ eradication of communicable diseases programme viz. malaria, filaria, small-pox, TB, leprosy, cholera, trachoma and sexually transmitted diseases (STD) would be vigorously pursued so as to staff the entire country with multi-purpose workers by 1981. Additional multi-purpose workers, both male and female, would be provided wherever there are shortages and the norm of one male and one female multi-purpose worker for 5,000 population would be achieved. Besides integration of the district supervisory staff for the control of communicable diseases, the budgetary provisions etc. would be reorganised to reflect this integration.

15.11 *Infant and Child Mortality* : Diahoreal diseases, infectious diseases and nutritional deficiencies are the major causes of mortality of children below 5 years. Measures for providing safe drinking water and programmes for improving disposal of excreta in the rural areas would help reduce this high morbidity and mortality to a considerable extent. New methods will be developed to provide these facilities, utilising the available technology and at costs within the reach of the masses. Simple and effective health education measures through extension education, mass media, person-to-person contact would all form part of the public health programmes and would have considerable emphasis.

15.12 The allocation made for rural health programmes during the Plan is Rs. 490.00 crores or nearly one-third of the total as against Rs. 120.30 crores provided in the Fifth Plan (1974-79).

15.13 The targets set forth in the Fifth Plan (1974-79), likely achievements by 1977-78 and targets envisaged in the Plan for 1978-83 are given in Annexure I.

15.14 Establishment, construction and maintenance of Family Welfare centres and maintenance of sub-centres under the Family Welfare Programme for which a sum of Rs. 262.00 crores has been provided, would further supplement the infrastructure facilities in the rural areas.

Control of Communicable Diseases

15.15 Next to rural health, the control of communicable diseases will be given the highest priority for which an allocation of Rs. 450.00 crores has been made.

15.16 *Strategy* : Diseases like TB, gastro-intestinal infections, malaria, filariasis, infectious hepatitis, rabies hookworm and other infectious diseases are vitally inter-related to environment. They accounted for 17.2 per cent of morbidity and 20.8 per cent of mortality in 1970. Another 9.4 per cent of mortality and 1 per cent of morbidity was due to preventable diseases like diptheria, whooping cough, polio, tetanus, small-pox and measles. Improvement of environmental sanitation and expanded immunisation programmes coupled with provision of adequate facilities in the form of a net work of hospitals and dispensaries to look after preventive and promotive measures, would be the guiding factors in the formulation and implementation of programmes.

15.17 In the Plan, programmes for control/eradication of communicable disesases would become fully integrated with other health care programmes and made available to the common man through a network of multi-purpose health workers. Any increase in the incidence or any revision of strategy for a particular disease would thereafter be taken care of only by increasing in the number of multi-purpose workers in localised areas coupled with technical expertise at district/State levels.

15.18 *Programmes for* 1978-83 : The proposals for the development of these programmes during the Plan are briefly indicated below :—

(i) *Malaria Control* : The modified plan of operation for control of malaria initiated in 1977-78 would be continued. Spraying operations in rural areas backed by anti-larvel measures in urban areas would be implemented with vigour. The cooperation of the public would be actively sought so as to make this a mass programme particularly in areas where the incidence is high. The programme will be constantly monitored and research stepped up so as to develop more cost-effective methods of control. The programme will continue to receive 100 per cent Central assistance.

(ii) *Filaria Control* : No effective strategy to contain this disease in rural parts of the country has been evolved so far. Eightyfive million out of an estimated 136 million population susceptible to Bancroftian Filariasis live in the rural areas. Measures to tackle this problem need to be given importance based on the findings of experimental studies already initiated in three selected district of U.P., Gujarat and Andhra Pradesh. Filaria and malaria control measures would also be integrated into a composite programme.

(iii) *Leprosy Control* : Measures for control of leprosy will be pursued vigorously. Besides financial involvement of State Governments, it would be necessary to encourage voluntary agencies in the implementtation of this programme by providing adequate support through grants-in-aid etc. The functions of leprosy workers would be integrated with other unipurpose workers under the multi-purpose workers scheme but this integration would be carried out last in respect of hyper-endemic leprosy districts. Even thereafter, if necessary, additional workers would be provided to the extent necessary so as to effectively contain this scourge. Adequate financial and other incentives may have to be provided to doctors and other para-professional workers under this programme in view of the social stigma attached to this disease.

(iv) *Control of Visual Impairment and Blindness* : Measures for the prevention of visual impairment and control of blindness envisage strengthening primary health centres and district/taluk hospitals in the country with opthalmic treatment facilities, setting up of opthalmic mobile units, strengthening of opthalmic departments of selected medical colloges in the country, and the setting up of regional institutes.

(v) *Control Programme of other diseases* : Measures for control and prevention of T.B., cholera and sexually transmitted diseases (STD) would be continued in the coming years. The primary and revaccination programme of small-pox would be continued to maintain zero incidence already achieved. As with other programmes of control of communicable diseases, workers engaged in these programmes would be converted into multi-purpose workers. These control/eradication programmes would be further supplemented by expanded immunisation scheme during 1978-83.

Hospital Beds and Dispensaries

15.19 *Hospitals and Dispensaries in Urban Areas* : In view of the fact that the bulk of the provision of hospital beds is in urban areas, and especially in the cities and State Capitals, it will be a policy not to increase this provision except to a very limited extent and only in cases where such expansion is strongly justified on grounds of need and priority. In such cases urban areas would be expected to meet a part of the cost of these facilities through local cesses and revenues.

15.20 Attention will be given to minimise pressures on city and State hospitals and to reduce costs. These would include the establishment of convalescent homes to accommodate patients who do not need active medical treatment, setting up of polyclinics to provide referral services to urban dispensaries and provision of dharamshalas within the vicinity of hospitals for accommodating families accompanying patients drawn from far off places. Establishment of new hospitals, additions to the existing hospitals and the number of additional beds would be so planned as to ensure balanced regional distribution, viability and sound management. A proper delineation of functions among hospitals, polyclinics and dispensaries will be attempted to ensure optimum utilisation of the available facilities.

15.21 *Hospitals and Dispensaries in Rural Areas* : The bulk of the resources available for this programme will be utilised for strengthening the facilities available at the door-step of the people viz. the taluk hospitals or conversion of primary health centres into rural hospitals. Next in order of priority will be hospitals in medium-sized towns and district headquarters.

Medical Education, Research and Training

15.22 Facilities for medical education have been over-expanded during the last thirty years, and the over production of doctors is creating serious problems of employment and even in private practice. It is, therefore, necessary to stop any further expansion with a firm hand. No new medical colleges would be established. The admission capacity of existing institutions should not be increased and where necessary should be reduced to match the actual facilities available.

15.23 *Under-Graduate Medical Education* : Attention will be directed, in the years ahead, to programmes of qualitative improvement in under-graduate education. The basic problem is to produce a doctor who will be able to provide good health care and medical service to the community and will be able to work effectively in rural areas. The programmes of under-graduate education will, therefore, need several major reforms. These include : curricular reform ; active participation by medical colleges in the health care delivery system, the shifting of the internship programme from the teaching hospitals to the district taluk hospitals, primary health centres etc. ; and the deployment of the staff of the college at all levels of the service. Community medicine should take a pre-eminent place and it should be made the joint responsibility of the entire faculty and simultaneously include service doctors, public health administrators, general practitioners etc. Measures for bringing qualitative improvement in educational standards which have been worked out during the Fifth Plan will be implemented expeditiously so that during the 1978-83 Plan period, it will be possible to produce medical graduates who are aware of the health problem of the community, who have a sense of compassion and motivation to serve the public and who have ability to effectively meet the urgent needs of the health care problems of the rural masses and the urban poor.

15.24 *Post-Graduate Education* : The need of specialists and post-graduates in selected specialities will have to be carefully assessed. A rationalised pattern of post-graduate education, keeping in balance the requirement of the nation and the advancement opportunities for medical graduates would have to be worked out. The scheme of unified national examinations initiated in the Fifth Plan will be continued. A scheme of continuing education to ensure updating knowledge and skills of doctors would be evolved.

A similar programme of in-service education will be developed for medical college teachers who have to be acquainted with medical education technology to improve their teaching skills.

15.25 *Para-Medical Personnel* : The evolution of a suitable career structure for all para-medical personnel, proper delineation of their functions as part of the health team and improvement in the quality of training will be pursued during the 1978-83 Plan. A beginning would be made to train various members of the composite health team in the medical colleges and related institutions.

15.26 *Health Information* : Information is a vital tool to management. With growing emphasis on provision of health care facilities at the doorsteps of the people, there is simultaneously a need to expand and improve the health information system. Training in management would also be provided to health personnel at various levels. The planning machinery would be strengthened at State as well as at Central level.

15.27 *Research* : Medical Research in the past had, by and large, failed to lay emphasis on problems of immediate practical importance. Efforts were mostly towards collection of disjointed and isolated research work by individuals/agencies in the country. Ad hoc research programmes taken up did not yield commensurate results. Steps are called for to re-orient medical research programme with emphasis on (i) major communicable diseases such as malaria, leprosy, TB, cholera, (ii) fertility control research, (iii) research on nutrition and metabolic problems, and (iv) research on delivery of health services. Steps to counter the new challenges posed by the diseases like malaria, leprosy and kala-azar call for accentuated efforts in the field of medical research to ensure control/eradication of these diseases effectively and economically by developing alternative models based on research. Further, the implementation of the control/eradication of communicable diseases programme would need to have built-in research component to test the validity of the basic principles, help evaluate the programme systematically and incorporate necessary mid-course correction. Various alternative strategies in the delivery of health services would also be investigated and pilot projects undertaken for this purpose. These objectives are very essential for ensuring a systematic and sustained delivery of promotive, preventive, curative and rehabilitative health services with equal access to all and at reasonable cost to the country.

15.28 *National Health Care and Medical Education Commission* : A need has been felt for a central coordination agency at the national level to deal with all problems of medical education, research and training. From this point of view, Government is examining the recommendation of the Srivastava Committee to set up a Health Care and Medical Service Commission. It will deal with all aspects of the planning of medical manpower, medical education, research, training of all para-medical personnel and will strive to create an integrated system of training and education which will be in keeping with the alternative models of health care services that are being or proposed to be developed. A high level committee is proposed to be set up immediately to work out the detailed proposals.

15.29 *Indigenous Systems of Medicine & Homoeopathy* : The Indian Systems of Medicine & Homoeopathy have been practised in the country for a long time. However, teaching and practice of these systems did not receive appropriate and methodical attention due to the almost exclusive emphasis placed on the al-

lopathic system. The Government attaches great importance to these systems particularly because, proper scientific practices of these systems will go a long way in improving and maintaining public health.

15.30 The outlay for programmes for these systems of medicine would be stepped up so as to expand health care facilities through these systems to a wider population and to ensure fuller utilisation of existing personnel. The Plan proposals are mainly aimed at (i) re-orienting the existing traditional practitioners in various systems, strengthening their professional knowledge, (ii) reviewing and prescribing uniform syllabi for under-graduate and post-graduate education, (iii) assisting in equipping under-graduate colleges to meet the standards laid down by Central Councils of Indian Medicine and Homeopathy and to train teachers therefor, (iv) evolving and publishing pharmacopoeia, (v) providing organisation arrangements for manufacture and testing of medicines, and (vi) encouraging intensive research in all these systems. The development of these systems of medicine should aim more towards supplementing the health care facilities in the country keeping in view the needs and demands for these systems of medicine in different parts of the country.

Other Programmes

15.31 *Drug Control.*—Establishment of new drug testing laboratories, strenthening of existing drug testing laboratories and formation of squads for checking spurious and adulterated drugs will receive attention. The Centre would ensure measures for procurement and supply of life saving drugs in adequate quantities required for health care programmes of the country.

15.32 *Control of food adulteration.*—The Central Committee for Food Standards has to play a vital role for devising food standards and undertake research in standardisation work. The scheme for providing assistance to States/Union Territories for setting up combined food and drug testing laboratories will be continued. Training of Analysts and Food Inspectors is another important aspect under this programme.

15.33 *Drug addiction.*—The incidence of drug addiction especially among the students, is causing concern to Government and to the public. The National Committee on Drug Addiction, which was appointed to enquire into this problem has submitted its report recommending among other things setting up of a National Advisory Board for Control of Drug Abuses. This report has been broadly accepted by the Government.

15.34 *School Health Programme.*—Health measures under the school health services programme need to be strengthened. Detection as well as treatment of defects among school children should form part of the general services made available in rural areas through primary health centres and in urban areas through the medical staff of hospitals and dispensaries.

15.35 *Health Education.*—Literacy of the population has a direct bearing on the lowering of infant mortality. Simple education measures for bringing up health consciousness among the people, particularly in rural areas and urban slums through measures such as utilisation of mass media would be given priority. Health education measures should form an integral part of health schemes as well as elementary and adult education. Provision of adequate number of Basic Extension Educators at primary health centres level coupled with training programmes for Health Educators would ensure health education of the masses in the villages.

15.36 The total outlay for the 1978—83 Plan will be Rs. 1330 crores. This would roughly be twice the outlay provided in the Fifth Plan (1974—79). The break-up of the outlay by broad sub-groups of the programme is given in Annexure II.

Family Welfare

Introduction

15.37 The population of India has grown from about 250 million in 1921 to 548 million in 1971 and is expected to be around 634 million as of March, 1978. The decennial growth rate has accelerated over the last 50 years from about 11 per cent during the 20's, 14 per cent during the 30's and 13 per cent during the 40's to about 22 per cent during the 50's and 25 per cent during 60's. The annual growth rate was thus at a peak level of 2.24 per cent during the 60's. The birth rate which was as high as 49 per thousand of population during 1901—11, declined gradually to about 40 during 1941—51 and was around 41 during the 50's and 60's. The death rate however, declined more sharply from 47 during 1911—21 to about 19 during the 60's with the result that the natural growth rate increased from near about zero during 1911—21 to 2.2 per cent during 1961—71. The Family Planning Programme which started in the early 50's in a small way became target-oriented in the Fourth Plan (1969—74). A birth rate of about 35 per thousand population at the end of the Plan was achieved.

Review of Fifth Plan

15.38 The Fifth Plan laid down the objective of reducing the birth rate further to about 30 per thousand by the end of the Plan period and to 25 per thousand by the end of 1983-84. Operational programmes were drawn up with a view to achieving the required reduction in the birth rate. The operational targets involved a little over 18 million sterilisations, nearly 6 million IUD insertions and about 9 million Conventional Contraceptive Users (CC Users) by 1978-79. Against this during the first four years of the Plan 13.3 million sterilisations, 2.1 million IUD insertions were performed and the number of CC Users at the close of the period was around 3 million. The yearly position is as follows :

Years	Sterilisations	IUDs	Eq. CC Users at the end of the period
(1)	(2)	(3)	(4)
		(In millions)	
1974-75	1.35	0.43	2.52
1975-76	2.67	0.61	3.53
1976-77	8.26	0.56	3.51
1977-78 (P)	1.00 (Vol.)	0.50	3.00

(P) Provisional (Vol.)—Voluntary

15.39 As of December, 1977 about 26 million of the 106 million eligible couples were protected under the various methods by the programme. It is estimated that over 33 million births have been averted since the inception of the programme and as a result the birth rate for 1977-78 is expected to have come down to around 33 per thousand of population.

15.40 The Fifth Plan did not achieve the desired demographic objective. Non-attainment of the stipulated reduction in the birth rate may be partly explained by the insufficiency of the efforts to project the programme throughout the country with the active cooperation of the people and partly by inadequacy in infrastructure available for implementing the programme. There had been shortfalls in the implementation of the Multi-purpose Workers Scheme as also in making the desired progress under the Maternity and Child Health (MCH) schemes on which emphasis was laid in the Fifth Plan. Climate of coersion and pressure, as was witnessed in some parts of the country during the period of internal emergency in connection with the implementation of the Family Welfare Programme, resulted in an attitude of antipathy and indifference towards this programme in the post-emergency period.

15.41 The financial allocations, expenditure and some of the physical targets and likely achievements during the Fifth Plan are given in Annexure III.

Five Year Plan 1978—83

15.42 The Family Welfare Programme will continue to be accorded a high priority in the socio-economic development Plan. While the programme will continue to be Centrally sponsored during the Plan period, the strategy will be to increasingly integrate the Health, Family Welfare, MCH and Nutrition services at all levels. Besides integration of the above services, the programme will also secure general integration of the Family Welfare Programme with other welfare programmes. The directions given in the Statement of Policy on the Family Welfare Programme announced in June, 1977 would provide the ambit within which the family welfare activities will be chalked out and promoted. The measures suggested in the Statement of Policy include raising of age of marriage ; improvement of women's educational level through formal and non-formal channels; spread of population values and small family norm ; involvement in the programme of voluntary women and youth organisations and trade unions, panchayats, cooperatives, etc.; promotion of all methods of contraceptions; all ministries/departments at the Centre and States to give due importance to the programme and work for its furtherance ; and accelerated training of local birth attendants. Other measures indicated in the Population Policy Statement are: (i) continuation of cash compensation for voluntary sterilisations, (ii) 8 per cent of the Central assistance to State Plans to be ear-marked and released on the basis of performance and success in family welfare, (iii) adoption of 1971 Census population figures till 2001 in the sharing of Central resources with the States, (iv) full rebate in income-tax for specified donations for family welfare purposes and (v) offering of free services under the Family Welfare Programme, etc.

15.43 Bringing about a change in the attitude and behaviour of people, especially in such an intimate area as contraceptive practices, is a very difficult and delicate task. Not only the individual but also the group decision to accept the small family norm has to be brought about through persuasion and education. Voluntary organisations will have an increasing role to play and opinion leaders will be actively associated for motivating the reproductive couples to accept the small family norm. Official support will be more towards provision of adequate services and supplies, follow up and aftercare services nearer the homes of the people. States with weak infrastructure and having high birth and high infant/maternal mortality rates would receive priority in the provision of services. Maternity and Child Health Schemes will be enlarged and intensified. Since a large number of couples will be entering the reproductive stage educational programme will be directed towards them for securing better demographic results. Research on development of simpler, effective and better methods of contraception, preferably belonging to the indigenous systems, will be promoted.

15.44 Earlier the changes in the age distribution of the population were favourable towards the reduction in the birth rate as the proportion of women of the reproductive age group showed a decline during 1961—71. This trend is expected to be unfavourable as the proportion of the reproductive women is likely to increase in subsequent years according to the projections of the Expert Committee on Population Projections. Thus, even if age specific fertility rates remain unchanged, the birth rate may show a rising trend. This shows the need for a determined effort to push up the Family Welfare Programme in order to bring about even a moderate decrease in the birth rate.

15.45 To bring down the birth rate to about 30 per 1,000 population by 1982-83, on operational programme of the following magnitude will be necessary.

Years	Voluntary Sterlisations	IUDS	CC & OP Users
(1)	(2)	(3)	(4)
			(In millions)
1978-79	4.0	0.6	4.0
1979-80	4.5	0.8	4.5
1980-81	5.0	1.0	5.0
1981-82	5.5	1.2	5.5
1982-83	6.0	1.4	6.0

The number of couples in the reproductive age-groups protected against conception will have to be raised to about 36 per cent at the end of the Plan against 25 per cent at the beginning of the Plan. A Working Group on Population Dynamics is being set up to consider the present demographic situation and achievement. The Group will further suggest appropriate measures and developmental programmes for the promotion of the Family Welfare Programme and feasible demographic and operational levels of achievement for the Plan and succeeding periods.

Services and Supplies

15.46 *Rural Main Centres and Sub-Centres* : Family Welfare and MCH Services in the rural areas will continue to be provided through the Rural Family Welfare Centres and Sub-Centres. Additional 180 Rural Family Welfare Centres will be opened and attached with the Primary Health Centres (PHCs). The backlog of 2500 functional buildings for these centres will be completed; in respect of about 700 primary Health Centres and Rural Family Welfare Centres for which no buildings have been constructed, an integrated building design will be followed. Fifty per cent of the backlog of non-functional buildings will be completed. The expansion programme of sub-centres will be covered under the Health Sector Programme.

15.47 *Urban Family Welfare Centres and Post-Partum Programme* : Eighteen hundred and twenty urban family welfare centres existing at present will be attached with the hospitals/ MCH centres. Fifteen hundred new urban centres will be opened during the Plan to cover the remaining urban population. Besides the urban centres, additional beds and operation theatre facilities have been sanctioned in medical colleges, major hospitals and district hospitals under the post-partum programme to promote institutional deliveries and acceptance of contraception thereafter. This programme is already sanctioned in 449 institutions; it will be started in 75 new institutions during 1978-79. To the extent feasible the existing urban centres will be attached to the new post-partum centres to achieve integration of the services. The post-partum programme will be extended to 400 taluka/sub-division level hospitals and 100 hospitals in the organised sector.

15.48 *Strengthening of Family Welfare and MCH Services in Selected States* : A close link is observed between the low acceptance of small family norm with the prevalent high infant and maternal mortality in certain States more particularly in Uttar Pradesh, Bihar, Madhya Pradesh, Rajasthan, Orissa etc. The family welfare infrastructure in these States is also not adequate. These deficiencies will be met and in comparatively backward districts of these States additional Family Welfare and MCH facilities will be provided. The activities of various welfare programmes at the field level will be coordinated and increased participation of voluntary organisations, mahila mandals and youth clubs for promoting the Family Welfare Programme will be secured.

15.49 *Contraceptive Supplies* : The supplies are arranged in terms of the anticipated needs arising from acceptance of different methods of contraceptions. Oral pills have been introduced during the Fifth Plan. In view of the fact that all methods of contraceptions will be promoted equally and the 'cafetaria approach' will continue to be adopted, the requirements will have to be worked out on the basis of popular acceptance of the various devices. Natural methods of family welfare are also to be promoted. Provision has been made in the Plan on the basis of trends of acceptance of the various devices. In view of the anticipated increase in the demand for nirodh, provision has been made for augmenting the production capacity for the manufacture of Nirodh.

Training

15.50 The quality of training imparted to the workers plays a crucial role in the propagation of the programme. The training facilities will be geared to the needs of the schemes pertaining to multi-purpose health workers and the community health workers. The training of local birth attendants (Dais) as an important component of the community health workers scheme. It is intended to complete the training of 'Dais' at the rate of one 'Dai' for 1,000 population during the Plan 1978—83.

Research & Evaluation

15.51 Research in the field of bio-medicine, demography, population studies and communication aspects is being increasingly supported by the Government. Six additional small demographic/communication action research centres have been sanctioned in the Fifth Plan so that all the major States would have the benefit of such centres. To balance their activities, these centres as well as some of the existing centres will be strengthened. Two new centres will be established in the coming five years.

15.52 Research on fertility control will be a priority item in the area of bio-medical research. In this regard indigenous system will receive greater attention. To avoid overlapping areas of research in reproductive biology, collaborative projects by various scientific institutions will be taken up for their mutual benefit.

India Population Project

15.53 The India Population Projects taken up in Uttar Pradesh and Karnataka with World Bank Credit and SIDA assistance amounting to $ 31.8 million is nearing completion. Adequate funds for completion of the project have been provided and important lessons drawn from this experimental project have been kept in view in formulating strategy of the Plan.

Mass Media and Extension Education

15.54 The approach so far has been oriented more towards mass education and adequate attention has not been paid to the extension techniques which have been successfully demonstrated in the agricultural sector. As the Programme of Family Welfare has to be implemented with the voluntary participation of the people and with the cooperation of public opinion leaders, intensive efforts for the strengthening of extension machinery will be made. In this task community health workers and multi-purpose workers will be fully integrated with the extension education structure which will provide family life and health education. A review of the existing machinery at the Centre, State and District level will be undertaken. This will include a second look at the training and utilisation of multi-purpose workers and community health workers for promotion of small family norm. Extension activities undertaken for the promotion of acceptance of small family norm will further be coordinated with the activities of other extension agencies working in the field.

15.55 For the voluntary and popular acceptance of the programme, mass media has an important role to play. The strategy will be to have a person to person approach so that proper information is imparted and fears (psychological or otherwise) if any, are adequately dispelled. All the available instruments of mass media will also be involved in the programme and special attention will be focussed on those States where awareness and acceptance of family welfare programme is low. The media will emphasise the new aspects of the population policy more particularly on the programmes regarding health, maternity and child care, population education etc.

Maternity and Child Health

15.56 The scheme under the Maternity and Child Health services under the Family Welfare Programme include immunisation of infants, pre-school children, expectant mothers with DPT, DT and TT respectively. In addition to the immunisation schemes there are schemes of prophylaxis against nutritional anaemia among mothers and children and prophylaxis against blindness in children caused by vitamin 'A' deficiencies under the Family Welfare Programme. The multi-purpose workers would provide the organisational support for these schemes. The number of beneficiaries to be covered in the Plan would be as follows :

Sl. No.	Scheme	No. of Beneficiaries to be covered	
		Likely position in 1977-78	No. to be covered in 1982-83
(0)	(1)	(2)	(3)
			(Million)
	Immunisation Schemes		
1	DPT of infants		
	(i) Primary Dose	3.75	16.00
	(ii) Booster Dose	1.25	3.50
2.	DT of Children	3.50	16.00
3.	TT of Mothers	3.00	9.00
	Prophylaxis Schemes		
1.	Against Nutritional Anemia among :		
	(a) Mothers	4.00	20.00
	(b) Children	4.00	20.00
2.	Against Vit. 'A' Deficiency among Children	9.00	25.00

Organisation

15.57 For the implementation of the programme, the organisation under the Central Government will be rationalised and to cope with the intensified activities envisaged in the Plan special attention would be paid towards effective and close monitoring of the programme in the States and for securing coordination with other concerned Ministries of the Central Government and with voluntary organisations and the organised sector.

15.58. The outlays provided in the Plan 1978—83 by major heads are indicated in the Annexure IV.

Health Programme—Physical Achievements and Targets

Sl. No.	Item	Position at the beginning of Fifth Plan (1973-74)	Fifth Plan		Likely position at the end of Fifth Plan (1977—78)	Targets for 1978-83
			Targets (Addition) 1974-79	Likely achievements (addition) 1974—78		
(0)	(1)	(2)	(3)	(4)	(5)	(6)
	Minimum Needs Programme					
1.	Primary Health Centres	5250	101	71	5321	30
2.	Sub-centres	33509	10317	5101	38610	38000
3.	Rural Hospitals	..	1293	215	215	400
4.	Backlog of construction of primary health centres			Spill over works		
	(a) Dispensary buildings with staff quarters . . .		918	218	700	Full coverage of functional buildings and composite buildings and 50% of staff quarters
	(b) Dispensary buildings only		552	132	420	
	(c) Staff quarters only		3211	591	2620	1310
	(d) Backlog of construction of sub-centres . . .		15462	3491	11971	50% coverage

ANNEXURE

Health Programme : Plan Outlay 1978—83

Sl. No.	Programme	Fifth Plan (1974—79)	Suggested outlays for 1978—83
(0)	(1)	(2)	(3)
			(Rs. crores)
1.	Rural Health Programme	120.30	490.00
2.	Control of communicable diseases	265.09	450.00
3.	Hospitals and Dispensaries	132.75	150.00
4.	Medical Education and Research	91.91	114.00
5.	Training Programmes	19.25	25.00
6.	Indigenous Systems of Medicine and Homoeopathy	25.07	60.00
7.	Other Programmes	27.29	30.00
	TOTAL	**681.66**	**1319.00**
8.	Employees' State Insurance Scheme		11.00
	GRAND TOTAL	**681.66**	**1330.00**

ANNEXURE

Family Welfare Programme

A—Allocation & Expenditure

Year	Allocation	Expenditur
(1)	(2)	(3)
	(Rs. lakhs)	
1974-75	5413.60	6208.6
1975-76	6319.95	8058.0
1976-77	7014.00	14825.6 (estimate
1977-78	9817.67	8977.0 (RE)
TOTAL	**28565.22**	**38069.4**

B—Physical Targets & Achievements

Sl. No.	Item	Position as on 1-4-74	Fifth Plan	
			Target (Additional)	Likely achievement upto 77-78 (Additional)
(0)	(1)	(2)	(3)	(4)
1.	District F.W. Bureau	338	20	14
2.	Rural FW Centres	5168	288	130
3.	Sub-Centres	33509	10317	5101
4.	Urban Family Welfare Centres	1820	..	..
5.	Regional Health & Family Welfare Training Centres	44	2	2
6.	(a) ANM Training Schools	321	..	7 (Voluntary schools)
	(b) Seats	8529	..	..
7.	(a) LHV Training Schools	22	5	..
	(b) Seats	825	150	337
8.	Post-partum Centres	124	400	325
9.	Trained Dais	45000	20000	55682
10.	Vehicles at PHC	2932	400	168
11.	Provision of voluntary sterilisation facilities:			
	(a) Primary Health Centres	..	1000	500
	(b) Taluka Level Hospitals	..	325	200

C—Family Welfare Performance in the Fifth Plan

Sl. No.	Item	Unit	Fifth Five Year Plan Target	Likely Achievement 1974—78
(0)	(1)	(2)	(3)	(4)
1.	Voluntary Sterilisation	Millions	18.0	13.3
2.	IUD Insertions	,,	5.9	2.1
3.	CC Users (end of Period)	,,	8.8	3.0
4.	No. of couples effectively protected (end of period)	,,	40—42	25
5.	M.C.H. Beneficiaries			
	A. Immunisation :			
	(i) DPT of infants	Nos. in lakhs	740.40	129.75
	(ii) DT of children	,,		80.46
	(iii) TT of Mothers	,,	210.00	67.76
	B. Prophylaxis against :			
	(i) Blindness due to Vitamin 'A' deficiency among children	,,	775.00	224.80
	(ii) Nutritional anemia among:			
	(a) Mothers	,,	265.00	160.11
	(b) Children	,,	265.00	142.19
6.	Birth rate (end of period)	Per 1,000 population	30	about 33

Family Welfare Programme—Plan Outlay 1978—83

Sl. No.	Programmes	Fifth Plan Outlay (1974—79)	Plan Outlay (1978—83)
(0)	(1)	(2)	(3)
			(Rs. Crores)
1.	Services & Supplies	419.41	640.30
2.	Training	13.07	44.40
3.	Research & Evaluation	9.03	9.80
4.	India Population Project	24.74	4.50[1]
5.	Mass Media and Extension Education	13.13	27.00
6.	Maternity & Child Health	8.57	26.00
7.	Organisation	9.41	13.00
	TOTAL	**497.36**	**765.00**

[1]The project is nearing completion.

Chapter 16

Urban Development, Housing & Water Supply

Urban Development

Planned urbanisation is a necessary component of the infrastructure of economic development as towns provide, *inter alia,* a variety of centralised services for the surrounding rural areas such as marketing of agricultural surpluses and products of village and cottage industries, and supply to rural areas of a variety of goods, e.g., fertilisers, engineering products like pumps and pipes, credit, manufactured essential commodities like bicycles, kerosene, soft-coke, building materials and medicines, and last but not least, specialist skills in a wide variety of fields required for rural development.

16.2. Urbanisation in India, however, has grown at a much faster rate than the provision of this infrastructure mainly because of the low living standards of a large proportion of the rural population, who migrate to the towns in search of livelihood. During the decade 1961—71, while the overall population grew by 24.7 per cent, the urban population grew by 37.9 per cent.

16.3. The most disquieting feature of the urbanisation process has been the significantly larger rate of growth of the large and metropolitan cities as compared to the small and medium towns. The table below illustrates this trend :

Table 16.1 : Growth of Urban Population by Size Class of Towns

Sl. No.	Town classification	Population	Proportion of population in each size class to total urban population		Growth Rate	
		1971	1961	1971	1951-61	1961-71
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1.	Class I (1,00,000 and above population)	57,016,458	48.37	52.41	+44.47	+49.35
2.	Class II (50,000 to 99,999)	13,223,110	11.89	12.15	+39.26	+40.86
3.	Class III (20,000 to 49,999)	18,885,483	18.53	17.36	+40.14	+29.10
4.	Class IV (10,000 to 19,999)	13,097,780	13.03	12.04	+18.23	+27.30
5.	Class V (5,000 to 9,999)	5,697,716	7.23	5.24	—30.07	—0.09
6.	Class VI (less than 5,000)	866,535	0.95	0.80	—62.30	+16.18

16.4. The thrust of the urbanisation policy during the next decade must, therefore, be to slow down and if possible reverse the rate of growth of the metropolitan cities and increase the rate of growth of the small and medium towns. It is proposed to do this by giving greater emphasis to the provision of infrastructural and other facilities to these small towns and to equip them to act as growth and service centres for the rural hinterland. For this purpose, increased investments are proposed in these towns in housing, water supply, communication facilities (e.g. post offices, telephones and telegraphs). Likewise facilities for education, medical care and recreation will need to be augmented. On the other hand, adequate support will also have to be given to the larger cities directed specifically towards improving the conditions of the urban poor and raising civic services upto acceptable levels.

16.5. The highest priority will be accorded to restricting the growth of population in the larger urban conglomerates. This will be achieved by a variety of measures such as granting incentives to shift industries to new urban centres and a ban on the setting up of new industries within certain limits of large cities as already announced in the Industrial Policy Statement. At the same time programmes of encouraging the growth of household and cottage industries under the rural industrialisation programme will be limited to villages and towns with a population of less than 25,000. Special attention will be given to the development of tiny industries in towns with a population of less than 50,000. In addition, State and Central Governments will be requested to put a ban on the setting up of offices, commercial establishments and centres of entertainment and culture in these cities. Even within large cities, efforts will be made to move Central and

State Government offices, banks and other institutions to the less congested areas of the city. Various fiscal and other measures will be considered for depressing the demand of telephones and transport facilities in pursuance of this policy. Unless fairly drastic measures of this kind are taken, there is a growing risk that in course of time all civic services will begin to break down and the quality of life will deteriorate further.

16.6. In the past, the major objective appears to have been to give greater emphasis to improving conditions in congested metropolitan cities on the assumption that they would continue to grow at their current pace indefinitely. Following this policy, support was given to the development of cities like Calcutta, Bombay and Madras. Likewise projects catering to the transport needs of congested areas of the city such as the Calcutta Rapid Transit Scheme being executed by the Railways at a cost of Rs. 240 crores have been sanctioned. Although a plan for preventing the growth of Delhi by the creation of a national capital region involving the development of satellite towns remotely situated from the city was approved, it has made little progress. Two of the major aspects of urban development to which inadequate attention has been paid have been housing and water supply and sewerage. To prevent speculation in urban land, the Urban Land (Ceiling & Regulation) Act 1976 was passed. As a result of uncertainty over the disposition of the surplus land, the immediate consequence of this Act has been a set-back to housing activity. The only scheme which tackled the immediate problems of urban poor was a scheme of slum improvement started for all the cities with population over three lakhs. This was a centrally sponsored scheme in the Fourth Plan but is now a part of the State Plans.

16.7. In the Five Year Plan (1978—83) the major emphasis will be on the following measures :

(a) A substantial step-up is proposed in the programme of slum improvement. It is estimated that about 5 million slum dwellers would have benefited by the scheme in the earlier plans. The proposed investment of Rs. 190 crores as against the actual expenditure of Rs. 43 crores during 1974—78 will benefit 13 million slum dwellers on the basis of an expenditure of Rs. 150 per head.

(b) In the next five years, Rs. 200 crores will be spent by the State Governments in urban development programmes which will include the provision of facilities such as roads, pavements as well as amenities such as theatres, bus-sheds, market places etc. State Governments will be requested to give special emphasis to the small and medium towns which support the integrated rural development programme. These programmes could be substantially augmented if regulated markets were developed and levies imposed to raise resources. In ten States, these levies were able to raise Rs. 52 crores in 1976-77.

16.8. A sum of Rs. 150 crores has been provided for the development of State capitals all of which is committed to on-going schemes and cover the cities of Calcutta, Bhopal, Gandhi Nagar and Chandigarh. The main activity is building office and residential accommodation, partly for Government and partly for development and sale to the public.

16.9. The integrated urban development programmes for which Rs. 200 crores is provided as Central assistance to supplement larger outlays by the State Governments is intended to augment essential urban infrastructural inputs such as water supply and sewerage, roads and road transport. So far, the bulk of funds has gone to the three metropolitan cities of Bombay, Calcutta and Madras. The emphasis in the next five years will, however, shift to medium and smaller cities. Even under the transport sector, no investments in new facilities for suburban railway services are planned except in the Calcutta Rapid Transit System and a fly-over at Bandra. Suburban railway transport, being highly capital intensive, should be examined with reference to alternative costs of measures for de-congesting and restricting growth rates in large cities so that the need for these railway systems does not arise.

16.10. Provision of Rs. 10 crores has been made in the Plan for the National Capital Region Project. This scheme, the details of which are under review, is expected to develop growth centres well away from Delhi so that they act as a barrier to the influx of population into Delhi and encourage migration away from Delhi to these centres.

16.11 All town planning studies in India have been postulated on varying but positive rates of growth in population of all cities indefinitely. Adequate attention has not been paid to the formulation of a policy for arresting the growth and decongesting large cities and working out the comparative costs of the two strategies over, say, a twenty-five year time-frame. A sum of Rs. 2 crores has been provided for studies in this area.

16.12. In the final analysis, the pace of urbanisation will come down to the desired levels only when the income levels and quality of life of the bulk of the rural population reaches acceptable levels. Thus, the basic approach to tackling the problems of urbanisation in the next decade will be to accelerate the tempo of rural development so that the problems of excessive migration to the cities can be kept in check.

16.13. A summary of the outlay for urban development is tabulated below :

Table 16.2 : Plan Outlays under Urban Development

Sl. No.	Scheme	Fifth Plan (1974-79)	Plan outlay (1978-83)
(0)	(1)	(2)	(3)
		(Rs. crores)	
1.	Environmental Improvement of Slums (MNP)	50.00	190.00
2.	Urban Development Programmes .	156.83	200.00
3.	CMDA and State Capital Projects .	143.92	150.00
4.	Integrated Urban Development Programmes	149.51	200.00
5.	Development of N. C. R. .	5.09	10.00
6.	Research, Development and Training Programmes	0.21	2.00
	TOTAL	**505.56**	**752.00**

Housing

16.14. India's population today is distributed in 579,052 human settlements. Nearly 80 per cent live in 575,933 villages. The remaining 20 per cent live in 3,119 urban settlements of between 5,000 and nearly nine million people. The average population of the villages works out to 762. Over 20 per cent of the urban population live in eight metropolitan cities and another 30 per cent live in 143 cities, with more than 1,00,000 people.

16.15. Housing inadequacies in India have both quantitative and qualitative dimensions. While the statistics regarding housing construction are not very reliable the information available does give an indication of the magnitude of the problem. The housing shortage at the beginning of the Fifth Five Year Plan was estimated at 15.6 million housing units—11.8 million in rural areas and 3.8 million in urban areas, reckoning the requirement at a minimum acceptable standard of housing. Qualitatively, conditions in terms of essential facilities like water supply, drainage and environmental hygiene are not satisfactory. Even quantitatively, the backlog in housing is on the increase from year to year as the rate of construction has not kept pace with the growth of population. Table 16.3 reviews briefly the performance during the last five Plans.

Table 16.3 : Estimated Housing Investment and Progress

A : Investment

Sl. No.	Scheme	First Plan	Second Plan	Third Plan	Three Annual Plans (1966-69)	Fourth Plan	1974-78
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
					(Rs. crores)		
1.	Plan expenditure on housing	48	80	110	80	141[1]	494
2.	Total expenditure on Public housing (including 1 above)	250	300	425	250	625	795
3.	Private sector	900	1000	1125	900	2175	3640[1]

[1]Estimated investment given in the Draft Fifth Five Year Plan (1974-79).

B : Physical Achievement

Sl. No.	Scheme	First Plan	Second Plan	Third Plan & Three Annual Plan	Fourth Plan	Fifth Plan 1974-76
(0)	(1)	(2)	(3)	(4)	(5)	(6)
				(Number of houses/tenements)		
1.	Subsidised industrial housing	43834	56166	65623	16343	1742
2.	Low Income Group	3930	49070	82196	36581	71843
3.	Middle Income Group		500	18540	9326	14132
4.	Village Housing Projects		3000	40492	17555	4792
5.	Slum Clearance & Rehousing		18000	51556	14073	31851
6.	Rental Housing		735	17300	2439	4328
7.	Plantation Labour Housing		300	1314	3135	4866
8.	Rural House Sites (in lakhs)				5.00	68.00

Note :—The coverage is in respect of schemes started during 1955-60. They do not, therefore, cover certain new schemes like 'one-lakh housing scheme' and 'people's housing scheme' started recently in certain States.

16.16. The housing problem in a 20-year time-frame would required the construction of enough houses to meet :

(a) the requirement of additional house-holds due to growth of population;

(b) the replacement requirements of obsolescent dwelling units; and

(c) to wipe out the existing backlog.

16.17. The achievement of such a goal will necessitate a construction programme of 4.5 million housing units per year—1.2 million housing units in urban areas and 3.3 million units in rural areas. Assuming an average cost of Rs. 15000 per unit in urban areas and Rs. 3000 in rural areas, the total investment in housing per annum works out to Rs. 2790 crores. Based on current norms of construction costs and rural urban population flows, the rate of investment in housing during the Fifth Plan is estimated to have been of the order of an average of Rs. 950 crores per year and, therefore, if the above goal is to be achieved, the investment level would have to be substantially increased. A step-up in this order in investment on housing particularly if any significant proportion of it is to come from the State sector is inconsistent with the likely resource availability in the near future if other priority investment is not to suffer. This highlights, therefore, the importance of—

(a) Slowing down growth of urban population especially in large cities where building costs are many times those in small cities and rural areas;

(b) Giving much greater attention to low cost housing techniques and standards so that there is a sharp fall in unit costs; and

(c) Greater stimulus and support to private housing especially in the middle and lower income groups, so that there is an incentive to channel savings into house construction. This will have to be accompanied by steps to decrease the cost of urban land. The present ratio—4 units of private sector housing to one in the public—will require to be stepped up.

16.18. House construction is an economic activity, which fits in well with the pattern of activities to which priority will be given in the next two decades, not only because it meets a basic need but, given the application of appropriate technologies, also creates employment in a massive and de-centralised scale and increases the much-needed purchasing power in the hands of lower income groups.

16.19. Hitherto Government's approach to this problem has been a limited one and was, as Table 3 shows, till the end of the Fourth Plan, exclusively devoted to the urban areas. It is only during the last four years that attempts to deal with the rural housing problem have been made mainly by the provision of land sites to landless labourers.

16.20. The effort so far to tackle even the problem of urban housing has been relatively modest and during the period 1974—78 a sum of only Rs. 494 crores would have been spent by Central and State Governments on housing programmes. This was supplemented to the extent of Rs. 240 crores by the LIC and about Rs. 160 crores by the Housing and Urban Development Corporation (HUDCO), an organisation set up during the Fourth Plan to support Housing Boards and apex cooperative housing societies. LIC has also been playing a prominent role in the field of private housing. Since its entry in 1959 in the field of housing, it has so far provided Rs. 728 crores. Currently, their investments in housing through various agencies amount to about Rs. 80 crores per annum. Besides, loans are given to employees in the organised sector, Government and banks for house-building, but the details in this regard are not available.

16.21. Although the various schemes executed by local housing boards are intended to create housing for the economically weaker sections (ESW), i.e., incomes below Rs. 350/- per month and the lower income group (LIG) with incomes between Rs. 351/- to Rs. 600/- per month in practice the cost of the units built has been such that the LIG units have largely been taken by people belonging to the middle income group (MIG) (Rs. 601 to Rs. 1500 per month) and houses built for the MIG have generally been taken by the upper income groups. The only class of employees who have had an appreciable level of Government of Quasi-Government support in housing are employees of Government itself including the Railways, Posts & Telegraphs, public sector corporations, and autonomous bodies like the Atomic Energy Commission, Council of Scientific and Industrial Research, etc.

16.22. Against this background, the Five Year Plan (1978—83) has the following objectives :

(1) Promotion and encouragement of self-help housing;

(2) Provision of house sites and assistance for housing to rural landless labourers;

(3) Formulation of public sector social housing schemes in such a manner as to cater to and also be within the paying capacity of economically weaker sections of the community;

(4) Augmentation of resources of institutional agencies like HUDCO and State Housing Boards to enable them to provide infrastructural facilities as a means of giving impetus for housing by private agencies; and

(5) Promotion of research in building technology and development of cheap and local building material.

16.23. The programmes for achieving these objectives are as follows :

Rural Housing

16.24. Rural housing scheme has to be implemented on a basis of self-help with assistance from the State. So far, 7.1 million landless families have been allotted house-sites free, still leaving about 10 million families without a site. A provision of Rs. 500 crores has been made for giving financial assistance for acquisition of plots and housing construction. The assistance will be at the rate of Rs. 500—750 per site, which has been found to be adequate in certain States who have adopted low-cost construction. This sum provides for the developed plot, provision for a well for 30 to 40 families and approach roads. This assumes that all the labour inputs will be provided by the beneficiaries. Approximately 8 million landless workers are likely to benefit from the scheme thus covering a substantial number of this section of the population. In addition, schemes are under consideration by HUDCO to assist in the rural housing programme for the population which is not covered under the above programme.

Urban Housing

16.25. As has been indicated in the section on Urban Development, it is proposed that the strategy of attempting a massive relocation of slums will be given up and instead substantially increased investments will be made in slum improvement. To arrest the growth of slums, the main emphasis in the Five Year Plan will be on housing for economically weaker sections. (EWS) apart from the measures outlined in the section on Urban Development for restricting the growth of population in large cities. The strategy here is to provide 'Sites and Services' with enough funds for a minimum structure, the beneficiary being given a loan not exceeding Rs. 3,000, repayable over a period of 20—25 years at concessional rates of interest. The scheme envisages that the beneficiaries will themselves gradually improve on the quality of the accommodation through their own efforts. A provision of Rs. 446 crores has been made in the Plan with a target of approximately 15 lakh units being constructed.

16.26. As of date, HUDCO has sanctioned 718 schemes in 222 cities covering almost all the States involving loan assistance of Rs. 307 crores and has disbursed Rs. 161 crores. On completion, these projects will provide about 2.28 lakh dwelling units, 47,000 developed plots and a number of shops and commercial buildings. Of these, about 83% of the dwelling units are reserved for E.W.S. and Low Income Groups. Fresh loans amounting to Rs. 90 crores have been sanctioned during 1977-78. In addition, HUDCO is launching new schemes like financing rural housing, apex cooperative and housing societies, urban development schemes and undertaking direct implementation of projects.

16.27 Provision is made in the Plan to raise equity of HUDCO from Rs. 16 crores to Rs. 56 crores to enable it to step up its borrowings. Including recoveries of loans, it will be able to invest about Rs. 450 crores over the next five years in various categories of housing programmes as follows :

E. S. W.	30%
L. I. G.	25%
M. I. G.	25%
H. I. G. and Commercial . . .	20%

16.28. The physical targets visualised from the proposed investments in the State Plans together with HUDCO's efforts are given below :—

TABLE 16.4 : Number of Housing Units Targeted

Sl. No.	Scheme	State Plan	HUDCO	Total
(0)	(1)	(2)	(3)	(4)
			(Lakhs)	
1.	E. W. S. (Upto Rs. 350 p.m.)	14.88	3.27	18.15
2.	L.I.G. (Rs. 351—600 p.m.)	0.60	1.23	1.83
3.	M.I.G. (Rs. 600—1500 p.m.)	0.19	0.56	0.75
4.	H.I.G. (above Rs.1500 p.m.)	0.03	0.27	0.30
	TOTAL	**15.70**	**5.33**	**21.03**

It is thus expected that the programmes for HUDCO and the States will lead to the creation of 2.1 million new housing units of which 85 per cent will be for the economically weaker sections.

16.29 LIC's experience with promoting housing by linking it with insurance policies does not appear to have stimulated significant investment in housing. It is proposed that the scheme may be reviewed to make it more effective.

16.30 To prevent speculation in land and ensuring the optimum use of land, a ceiling on urban land has been prescribed under the Urban Land (Ceiling and Regulation) Act, 1976. As a result of this Act, the State Governments will come into possession of substantial land, which could be used in an optimum manner for non-luxury housing. A system of dual pricing of land would be adopted to promote the social objective of providing land to weaker sections at a reasonable price and, in addition, to bring in possible extra revenue to the State. HUDCO, State Housing Boards and the L.I.C. could assist in the task of developing and disposing of the excess land. The Act also provides for the retention of excess vacant land by the owners provided they agree to construct not less than 50 per cent of the total number of dwellings for the benefit of the EWS of community within the next five years. This is an incentive in the right direction and needs to be vigorously pursued.

16.31 Cooperative housing societies need encouragement as they play an important role in individual hous-

ing effort. Developed or partially developed land will be allotted to the housing cooperative societies, whose successful functioning has been hampered due to lack of this facility. This is all the more necessary because of Urban Land (Ceiling and Regulation) Act has made it difficult for cooperative housing societies to purchase land in the open market.

Private Sector Housing

16.32 Reliable data on investment in private housing is not available after 1974-75. During this year, approximately Rs. 1545 crores were estimated to have been spent on private housing. Since then there has been some recession in investment in housing and it will not be far off the mark into assume that private sector investment in 1977-78 would be of the same order as was estimated for 1974-75. Based on the likely trends in the growth of private sector housing in the five-year plan it is estimated that this will lead to an investment of approximately Rs. 9000 crores. In order to stimulate private investment, the Rent Control Acts need to be reviewed so that they do not act as disincentives.

Outlay

16.33 The total proposed outlays for housing in the next Plan are shown below :

Table 16.5 : Provision in the Plan 1978-83 for Housing

Sl. No.	Scheme	Fifth Plan (1974-79)	Plan Outlay (1978-83)
		(Rs. crores)	
1.	Social Housing Schemes	455.97	595.00
2.	Rural house sites-cum-house/hut construction scheme	55.00	500.00
3.	Housing and Urban Development Corporation	14.00	40.00
4.	National Buildings Organisation	1.68	2.00
5.	Hindustan Housing Factory	0.15	1.00
6.	Rental housing and general pool residential accommodation	45.12	151.00
7.	General pool office accommodation	6.00	24.00
8.	House building advances to Government servants	*	120.00
9.	Police Housing	23.00	105.00
	TOTAL	**600.92**	**1538.00**

*Included in 1 above.

Water Supply and Sewerage

16.34 Paucity of and other competing claims on available resources were responsible for the slow growth of water supply facilities during the last five Plans. The table below gives investments made in the last five Plans :

Table 16.6 : Expenditure on Water Supply and Sewerage

Sl. No.	Scheme	First Plan	Second Plan	Third and three Annual Plans	Fourth Plan	Fifth Plan (1974-78)
(0)	(1)	(2)	(3)	(4)	(5)	(6)
				(Rs.	crores)	
1.	Rural Water Supply	3	30	48	194	347
2.	Urban Water Supply and Sewerage	8	84	174	380	403
	TOTAL	**11**	**114**	**222**	**574**	**750**

Rural Water Supply

16.35. Even after an expenditure of Rs. 622 crores, only 64,000 villages covering 10 per cent of the rural population will have safe drinking water supply facility at the commencement of the Five Year Plan (1978-83). Around one lakh problem villages will not have even the most elementary water supply facility. Real efforts in tackling the problem of rural water supply were made only from the Fourth Plan onwards. During the last two years of the Fourth Plan, an accelerated rural water supply scheme was introduced to deal with the problem of water supply in difficult areas. In the Fifth Plan, this was brought under the Minimum Needs Programme and outlays were specially earmarked for water supply in problem and difficult villages.

16.36. An assessment survey was undertaken at the instance of Central Government in 1971-72 which identified 1.52 lakh villages as falling under the category of problem and difficult villages. It has been estimated that as a result of larger investments since then a little over 1.04 lakh problem villages would have been covered by March 1978, leaving only 48,000 difficult villages to be covered. The State Governments, however, feel that the earlier survey was incomplete and that due to continuous drought in some areas, the water table has gone down or the sources have dried up, thereby increasing the number of difficult villages. According to the figures now made available by the State Governments, the number of these villages will be about 1.45 lakh at the end of 1977-78. It is necessary that the situation is correctly assessed so that a realistic plan could be drawn up.

Urban Water Supply

16.37. Through the position in the urban areas is relatively better, 20 per cent of the urban population in 1229 towns, out of a total 3119 towns in the country, do not yet enjoy the amenity of protected water supply. Besides, water supply schemes in many towns, even where installed, are in need of improvement and expansion.

16.38. Only 217 towns have sewerage facility, most of which, however, have it partially, the population covered is only 34 per cent of the urban population. The problem of collection and disposal of solid wastes has been on the increase in urban areas at an alarming rate, particularly in cities with large population. Concerted effort requires to be made in this respect of the problem. Suitable measures to regulate domestic and industrial effluents require immediate attention to prevent pollution of streams and rivers.

Objectives and Strategy

16.39. Proposals for the five year period 1978—83 address themselves to the following objectives :

(i) to cover the remaining problem villages with potable drinking water ;

(ii) to strengthen and augment urban water supply in areas which are currently having inadequate piped water supply ; and

(iii) to cover predominantly industrial cities fully with sewerage facilities.

16.40. Providing adequate water supply to the remaining problem and difficult villages requires huge investment. Low cost solutions are, therefore, essential to spread the investment to as many villages as possible within a given time perspective. The approach should be one well for one village so that the villages are assured of a definite source of water supply. Piped water supply is highly costly and would be adopted only when less expensive measures, such as, tubewells and sanitary dugwells, are impracticable on account of geographical and terrain conditions. The present criteria for classifying villages into problem and difficult villages (vide Chapter on Revised Minimum Needs Programme) will continue.

16.41. In order to derive continuous benefit from the rural water supply schemes already executed and planned to be executed, it is necessary to set up suitable and adequate technical machinery to look after the proper maintenance of the schemes.

16.42. In urban areas, provision of water supply would be considered as a service to be paid for by the direct beneficiaries through capital contribution and water charges. There is not only scope for enhancing water rates, but also for improvement in the realisation of water charges. When large water supply schemes are undertaken, the State Governments and local bodies should explore the possibility of raising funds for the scheme through levies on the beneficiaries.

Outlays and Programmes

16.43. The outlays for water supply and sewerage in the 1978-83 Plan are as under :

Table 16.7 Plan Outlays

Sl. No.	Scheme	Fifth Plan 1974-79	Plan Outlay 1978-83
(0)	(1)	(2)	(3)
		(Rs. crores)	
1.	Rural Water Supply . . .	432	765
2.	Urban Water Supply and Sewerage	539	815
	TOTAL	**971**	**1580**

16.44. With this outlay, it should be possible to cover all the remaining problem and difficult villages in the next five years and augment water supply in villages having inadequate and unprotected water supply to a considerable extent.

16.45. Of the provision of Rs. 815 crores for urban water supply and sewerage, nearly Rs. 350 crores are meant for major projects in larger cities. The bulk of these outlays are committed to on-going schemes. Of the remaining Rs. 465 crores, Rs. 450 crores will be for water supply and sewerage programmes of the medium and small towns. The balance of Rs. 15 crores is meant for public health engineering training, survey, investigation, designing and planning, rigs programme, solid wastes disposal, conversion of dry latrines into sanitary latrines and water and air pollution control.

Chapter 17

Social Welfare and Nutrition

Social Welfare

In promoting welfare services to the needy and vulnerable sections of the society, preventive and developmental measures should assume prime importance. It is essential to foster popular initiative and support in extending social welfare programmes both in urban and rural areas. State intervention has to be kept at a minimum and voluntary action has to be promoted to a large extent. The most needy should have the first claim in the share of welfare schemes organised by the Government as well as the voluntary organisations.

Review of Previous Plans

17.2. The First Five Year Plan provided a sum of Rs. 4.00 crores for Social Welfare. The Central Social Welfare Board, set up in 1953, gave grants-in-aid to voluntary organisations and started Welfare Extension Projects in rural areas for women and children on a limited scale. In the Second Plan, the Board's activities were expanded to include programmes like Welfare Extension Projects (urban), Condensed Courses of Education for Adult Women and Socio-economic Programme. Social Defence programmes to prevent juvenile delinquency, beggary and immoral traffic in women were introduced as centrally sponsored programmes. In the Third and Fourth Plans, specific programmes such as Integrated Demonstration Child Welfare Projects, Family and Child Welfare projects were undertaken in order to ensure healthy growth and development of children. These programmes were intended to demonstrate the value of an integrated approach for the care and welfare of children.

Progress during 1974—78

17.3. In the Fifth Plan child welfare was accorded the highest priority. A major programme 'Integrated Child Development Services' (ICDS) with a package of services consisting of supplementary nutrition, immunisation, health check-up, referral services, nutrition and health education and non-formal education was taken up on a modest scale.

17.4. The Central Social Welfare Board gave grants to voluntary organisations amounting to Rs. 303 lakhs. Besides, under the scheme of Department of Social Welfare, for care and protection of children, institutional and non-institutional services were organised benefitting 23,000 destitute children.

17.5. Welfare programmes for women gave priority to socially and physically handicapped women. The scheme of condensed courses of education for adult women was enlarge to include two new components, namely, one year course for SSLC failed candidates and vocational training courses. Nearly 1100 condensed courses were organised. Under the 'socio-economic Programme', 1080 units were sanctioned providing opportunity to socially maladjusted, economically backward and physically handicapped women. For providing safe accommodation at reasonable cost to working women in urban areas, 112 hostels were opened benefitting nearly 7,000 women.

17.6. The scheme of scholarships for general and technical education benefited 10,597 physically handicapped persons. Integrated education system for the handicapped was introduced in 7 States and in the Union Territory of Delhi.

17.7. In the State sector, high priority was accorded to family and child welfare services. Next in importance were the programmes for the welfare of the poor and destitutes. Of the total expenditure incurred in the State sector, family and child welfare schemes accounted for nearly 40 per cent, while the expenditure on the welfare of the poor and the destitute was around 17.5 per cent.

Strategy and Programmes for the Plan (1978—83)

17.8 With the growth of industrialisation, occupational mobility and increase in the levels of education and urbanisation, the traditional social structure and the process of intra, inter-group and community interaction is undergoing rapid change. People from different strata and social classes are taking up jobs unrelated to their earlier family background or ecological setting. Welfare services have so far been mostly institution based and concentrated in urban and metropolitan centres. These are largely being provided to the handicapped, aged, sick and infirm destitute women and abandoned children. With the changing social trends, these ad hoc services will have to be replaced by a well planned programme of education, training and rehabilitation. Schemes for the welfare and development of children and women would have to be accorded higher priority with increased bias towards preventive and developmental services. Various other schemes like distribution of cooperative credit for weaker sections, health programmes, functional literacy and nutrition schemes would have to be dovetailed so as to promote family welfare and improve economic capacity.

17.9 The contribution of voluntary organisations in various fields of social welfare continues to be very significant. Since it may not be possible for the Government to undertake sizeable schemes in this field

due to competing priorities, greater reliance has to be placed on the initiative and capabilities of voluntary organisations. These organisations would be offered adequate financial support to expand their activities. However, their personnel need orientation training so that the standard of services rendered by them could be improved. The spread of voluntary organisations in the country, is uneven. Efforts are, therefore, sought to be made to strengthen their organisational base in rural and tribal areas.

Women Welfare

17.10. Greater attention would be paid to welfare of women belonging to lower socio-economic groups, working women and those in need of care and protection. Establishment of day care centres, creches and balwadis for the children of working mothers both in rural and urban areas would receive further attention. The scheme of condensed courses for women will be linked with functional courses like training programmes for ANMS, Balsevikas, Anganwadi workers and secretarial services so that they could be gainfully employed. The socio-economic programmes would be reoriented to make them more viable and economically self-sustaining. With the increasing employment opportunities, more women migrate to urban areas. Therefore, the scheme for assisting voluntary agencies to set up more hostels for working girls would be suitably expanded

Welfare of the Handicapped

17.11 Various schemes for the education, training and employment of the handicapped would be intensified in the coming years. Scholarships for general and technical education will be expanded. The system of integrated education whereby handicapped children pursue their studies in the institutions meant for the normal children would be encouraged. Necessary publicity will be undertaken to bring to the notice of the parents of handicapped children the existence and advantages of scholarship programme.

17.12 The avenues that provide adequate employment opportunities to the handicapped would have to be widened. Recently, the Government of India have decided to reserve one percent of vacancies each for the blind, the deaf and the handicapped in groups 'C' and 'D' posts in Central services and in corresponding posts in the public undertakings. The State Governments have also been requested to take similar action. In order to assist the handicapped in securing suitable jobs, the machinery of special employment exchanges will be strengthened further. Voluntary agencies would be assisted to appoint their own placement officers to give fillip to the placement of physically handicapped persons in suitable employment.

17.13 The activities of the four National Institutes for the handicapped i.e. one each for the blind, deaf, orthopaedically and mentally handicapped would be strengthened and streamlined. Studies leading to identification of new techniques and adaptations, training of teachers, development of technical aids and supply of prosthetic aids would receive increasing importance.

Social Defence

17.14 Social defence programmes for the reformation and rehabilitation of social deviants will be expanded and strengthened. The National Institutes of Social Defence will continue to offer guidance and advice to the States and Union Territories. Besides, it will promote research, disseminate information and serve as a clearing house in the matter of exchange of information in this field.

Research and Training

17.15 Identification of the social problems and the measurement of their magnitude will have to be systematically done to facilitate formulation of suitable schemes. The empirical data to identify the welfare needs in tribal areas as also in North Eastern States is weak. Greater effort would, therefore, has to be made to encourage various institutions to take research studies in these areas. Also evaluation of the major ongoing programmes in this sector would be undertaken in order to assess their impact and improve their efficiency.

17.16. The National Institute of Public Cooperation and Child Development which has been recently strengthened to undertake research, evaluation and training programmes would identify social welfare needs of different regions especially in backward areas and also evolve suitable training programmes for welfare personnel. Emphasis would be placed on evaluation of important plan schemes in the State sector. The National Institute of Social Defence would initiate studies on the coverage and efficiency of institutional and other programmes under Children Act, the SIT Act and the Anti-Beggary Act. Also comparative cost efficiency analysis of various institutional and non-institutional modes of crime treatment will be undertaken.

Educational Programmes for Prohibition

17.17 Sustained educational programmes through mass media to mould public opinion in favour of prohibition would be undertaken. Voluntary agencies and local bodies like Panchayati Raj institutions will be associated in the implementation of this programme.

Child Welfare Programmes

17.18. Child Welfare Programmes will continue to enjoy high priority. Institutional services for children in need of care and protection will be expanded. Also foster-care and other non-institutional services will be encouraged to provide congenial atmosphere for the growth of children.

Integrated Child Development Services

17.19. This scheme which has been providing immunization, health check-up, referral services, nutrition and health education, supplementary nutrition and non-formal education for pre-school children will be improved. On the basis of experience gained so far, the scheme will be modified to offer services in an integrated manner. Better inter-departmental coordi-

nation will be ensured at the field level and the functional responsibility for the delivery of different services will be placed on the participating Ministries and Departments. This scheme would be expanded selectively to cover thickly populated backward areas and urban slums.

Nutrition

Review of Previous Plan

17.20. The first two Five Years Plans recognised the necessity to combat the ill-effects of malnutrition. Nutrition remained largely a subject of research under the Ministry of Health. Only a few programmes like prevention of food adulteration were initiated. Even under the Third and Fourth Five Year Plans these programmes did not make much headway. It was only in the Fifth Plan that the nutrition programmes were intensified.

17.21. The Fifth Five Year Plan aimed at augmentation of food production and economic uplift of the people for improving the nutritional status of the population. Since this strategy was intended to be a long-term one, the supplementary nutrition programmes started during the Fourth Five Year Plan were intensified for countering the ill-effects of malnutrition among children. The scope of these programmes was also considerably expanded to cater to the needs of pregnant and nursing mothers, pre-school and school children belonging to weaker sections. Supplementary nutrition programmes became an integral part of the Minimum Needs Programme.

17.22. Two important Supplementary Feeding Programmes of the Fifth Plan were the Special Nutrition Programme for pre-school children in the age group of 0-6 years, pregnant and nursing mothers in urban slum, tribal, drought prone rural and hill areas and Mid-day Meals Programme for school children in the age group of 6-11 years belonging to weaker sections of the society. The operation of these two schemes revealed certain weaknesses. It was noticed that inspite of enormous inputs, the feeding programmes had not produced impact to an appreciable extent on the community. Continuity in the supply of foods was not maintained in all the feeding centres. The minimum number of feeding days in each centre was not adhered to by many States. The coordination of this scheme with other services like health check-up, immunisation and safe drinking water left much to be desired. Besides, the rising food cost had its own adverse effect on the prescribed nutritional standards of services to be rendered to the beneficiaries. During 1974-75 and 1975-76, several States found it difficult even to maintain the coverage of Special Nutrition and Mid-day Meals Programmes reached by the end of the Fourth Plan, let alone expand it. Since then, the situation has improved and the programmes have started picking up momentum.

17.23. By the end of the Fourth Plan the Special Nutrition Programme had achieved a coverage of 3.7 million beneficiaries through about 28,000 feeding centres spread all over the country. While the Fifth Plan envisaged a target of 10 million beneficiaries, to be reached over a five year period, about 6 million children, pregnant and nursing mothers could only be covered by 1977-78. Under the Mid-day Meals Programme about 12 million beneficiaries had been covered by the end of the Fourth Plan mainly with the food assistance from CARE. As against the Fifth Plan target of covering 16.5 million beneficiaries, the actual coverage is expected to be about 13 million children.

17.24. About 1.18 lakh tonnes of Balahar was produced for utilisation in feeding programmes for children. Besides, three Miltone units set up at Bangalore, Hyderabad and Ernakulam had produced about 35 lakh litres of Miltone.

17.25. The main programme in the field of Nutrition Education in the Fifth Five Year Plan was Applied Nutrition Programme which aimed at making the community conscious of balanced nutrition and bringing about beneficial changes in the food and dietary habits through local production, demonstration, cooking and feeding. The number of Applied Nutrition Programme blocks reached to 1615 by the end of 1977-78, of which four hundred and thirty four new blocks were added during the Fifth Plan. The programme is being evaluated by the National Institute of Nutrition and NICD, Hyderabad to assess its impact.

Strategy and Programmes for the Plan (1978—83)

17.26. The nutritional status of the population can only be ensured by increasing food production, imparting proper nutrition education and improving the economic status of the people so that the families can afford to buy and consume balanced diet. Supply of free or subsidised food under Supplementary Feeding Programmes is not an adequate answer to the problem. The existing feeding programmes would, therefore, be reviewed to produce better impact and emphasis will, therefore, be placed on the integrated development of rural areas and development of adequate employment opportunities so as to provide purchasing power to the vulnerable sections of the population. Resources are to be utilised primarily to cater to the severely mal-nourished children and pregnant and nursing mothers so as to keep the public expenditure to the minimum and to provide increased benefits to meet the needs of population at risk. The expansion under the Mid-day Meals Programme would be designed to benefit backward rural areas.

Supplementary Feeding Programmes

17.27. As a part of the revised Minimum Needs Programme it is proposed to cover about one million additional beneficiaries under Special Nutrition Programme and four million beneficiaries under Mid-day Meals Programme. Besides, Special Nutrition Programme will also be in operation in the Integrated Child Development Services projects catering to the needs of pre-school children, pregnant and nursing mothers.

Production, Processing and Supply Schemes

17.28. Production of low cost nutritious foods and fortification of food-stuffs will be intensified. In addition, effort will be made to coordinate the implementation of these schemes by different departments. This will promote an integrated

development of the main elements of nutrition, namely, production, processing, supply, consumption and efficient utilisation of foods.

17.29. The production of those commodities which are in short supply from the point of view of maintaining adequate levels of nutrition will be augmented so as to meet the nutritional requirement of the population. Moreover, the production of Balahar and other low cost food preparations from locally available raw materials will be increased in a phased manner for the benefit of the vulnerable sections of the population. Schemes relating to fortification of food-stuffs with appropriate nutritents will be intensified to minimise specific nutritional deficiencies existing in large sections of the population. Steps will also be taken for the extension of programmes of research and development of low cost balanced diet. Development of teaching and other aids for nutrition education, exploitation of potential food resources, enhancement of the nutritive value of crops and other aspects of improving nutrition will also receive greater attention.

Applied Nutrition Programme

17.30. The programme will receive due attention under the integrated area development approach of the Government. The operation of the programme components would be reviewed and modified to make its functioning effective.

17.31. Scheme-wise details for Social Welfare and Nutrition are given in the table below :

Table 17.1 Outlay for Social Welfare and Nutrition

Sl. No.	Programme	Fifth Plan (1974-79)	Plan (1978-83)
(0)	(1)	(2)	(3)
		(Rs. in crores)	
Social Welfare			
1.	Child Welfare	31.13	54.50
2.	Women Welfare	22.01	26.14
3.	Welfare of handicapped	11.40	17.23
4.	Planning, research, training and evaluation	4.15	4.29
5.	Grants-in-aid to voluntary organisations	11.14	18.50
6.	Others	6.30	9.84
	TOTAL	**86.13**	**130.50**
Nutrition			
1.	Nutrition Schemes of Department of Food	14.50	25.00
2.	Applied Nutrition Programme	12.99	21.60
3.	Supplementary Feeding Programmes	88.18	127.90
	TOTAL	**115.67**	**174.50**
	GRAND TOTAL	**201.80**	**305.00**

Chapter 18

Development of Backward Classes

About one fourth of the population comprise scheduled castes and scheduled tribes and other backward classes who by and large live below the poverty line. The magnitude of the problem of bridging the gap between the levels of living of these groups and the rest of the population is considerable. They continue to pursue traditional occupations and in spite of employment opportunities generated through various economic activities, are unable to secure employment due to their low educational levels and lack of skills. A large majority of tribal population inhabit isolated hilly areas which are often inaccessible, while the problem of scheduled castes is rendered more difficult since this group also suffers from practice of untouchability. There are constitutional directives to remove their disabilities and in consonance with these directives, a number of legislative and executive measures have been taken by the Central and State Governments. Apart from this, special programmes were formulated for their socio-economic development in successive plans.

Review of previous Plans

18.2. The programmes in the backward classes sector are conceived as a supplement to the total developmental effort to be made by the general sectors of development for promoting social and economic well-being. Under the successive plans, Rs. 685 crores were spent on this sector. Of this, more than 48 per cent were spent on educational schemes, 28 per cent on economic schemes and the rest on health, housing, drinking water supply and grants-in-aid to voluntary organizations working amongst scheduled castes and scheduled tribes.

18.3. The educational schemes implemented were pre-matric and post-matric scholarships, grant of stipends, free-ships, mid-day meals, uniforms, exemption from payment of examination fees, book grants and hostel facilities. By 1977-78, more than 50 lakh of Backward Classes children were receiving stipends and scholarships at pre-metric level annually, and another 4.22 lakh students at the post-matric level. Thirteen pre-examination training centres had been established to coach candidates appearing in State Civil Services and other subordinate service examinations and nine centres for All-India Services and other Central Services. Most of the economic schemes were distributive in nature viz., grants and subsidies to individuals for agricultural inputs, horticulture, fisheries, animal husbandry, cottage industries, training-cum-production centres etc. Programmes of housing and house-sites to backward classes and especially the scheduled castes has received attention. Efforts were made to improve working and living conditions of scheduled castes engaged in hereditary unclean occupations, but these have not made much impact and there was also some resistance on the part of scavengers to change conventional methods of work. Other programmes included establishment of tribal research institutes for survey and research on tribal problems, and grants-in-aid to voluntary organisations engaged in welfare of backward classes.

18.4. A review on the eve of the Fourth Plan showed that the nature of plan outlays in the backward classes sector, namely that it was essentially supplemental to the sectoral programmes, was not fully recognised. In actual practice, the schemes were formulated in an ad hoc manner without having a long-term perspective and further, this sector tended to substitute the general developmental funds for these classes. In the Fifth Plan, therefore, a new strategy was evolved to ensure flow of benefits from general sectors to backward classes. The State Governments were requested to quantify funds from identifiable programmes in proportion to the population of these groups in the State and orient the programmes, as far as possible, to the needs of backward communities and the tribal areas. Relaxations were made in the norms of Minimum Needs Programmes in favour of these groups. It was reiterated that the backward classes sector would continue to be supplementary as in the past. In consonance with this strategy, separate sub-plans have since been under implementation in 16 States and 2 Union Territories for areas of tribal concentration. The major thrust in the sub-plans areas has come from State Plans; supplementary aid was given by the Centre as special assistance. Two third of tribal population have so far been covered in these sub-plans. However, for the scheduled tribes living outside tribal areas and the scheduled castes who are dispersed among the general population, the thrust of development from the general sectors' programmes has not been adequate.

Policy and Strategy for the next Plan (1978—83)

18.5. Since the main objectives of the Five Year Plan, 1978-83 are employment-generation, reduction in poverty and provision of basic needs and services, it is imperative that the scheduled castes, scheduled tribes and backward classes, who constitute the poorer and more vulnerable sections of the community, receive maximum benefit from the Plan programmes designed to achieve these overall objectives. The strategy of development of backward classes will be to lay greater emphasis on identification of schemes under general sectors of development, which would be of particular benefit to them. Besides quantification of funds from divisible programmes under each sector, specific targets as to the number of their families which would benefit from these programmes would have to be determined.

18.6. In the selection of blocks under the new integrated rural development programmes, preference will be given to those where the scheduled castes constitute more than 20 per cent of the population, and all such blocks will be covered in the Plan. In these blocks, identified scheduled caste families will

be assisted through loans and grants with agricultural inputs and for development of horticulture and animal husbandry. The substantial expansion of khadi, handloom and other small industries projected in the next five years under the village and small industries sector, will generate new employment opportunities for skilled and unskilled rural scheduled caste workers. Rural housing programmes will be of particular benefit to the scheduled castes. Under water supply and sewerage schemes, emphasis will be placed on construction of sanitary latrines in urban and semi-urban areas so as to eliminate the pernicious habit of carrying night-soil as headloads. The sweepers and scavengers thereby rendered surplus will be helped with alternate occupations. It will also be ensured that the benefits of other enlarged rural social services such as, health and education accrue to the backward communities.

18.7. Another objective to be pursued with vigour will be the eradication of untouchability in all forms so that social disabilities no longer inhibit the economic and social development of the scheduled castes. For vigilance in the eradication of untouchability, special cells have been set up in a few states for proper and speedy investigation of complaints involving offences against members of the scheduled castes. The constitution of such cells in the remaining States will be completed. Publicity and propaganda against the practice of untouchability will be intensified. As before, active involvement of voluntary agencies will be secured in the various schemes for ameliorating the conditions of scheduled castes, scheduled tribes and other backward classes.

18.8. The sub-plan strategy in regard to tribal area development will continue ; the programmes will be intensified, with suitable modifications to remove the present inadequacies in programme implementation. The objective of narrowing the gap between the levels of development of tribal areas and other areas and bringing a qualitative change in the life of the tribal community more rapidly will be achieved through a strategy of consolidating the gains of protective measures and programme of full employment. A comprehensive and systematic effort will be initiated to alleviate the conditions of the tribals in the hinterland of the existing industrial complexes. Besides economic development, emphasis will be given to educational and health services in the tribal areas.

Programmes of Development

18.9. In the backward classes sector, the main thrust will be on raising literacy and improving the educational levels of backward classes through schemes of pre-and post-matric scholarships, coaching classes, boarding grants, hostel facilities etc. A concerted drive will be made for expanding adult literacy. Greater emphasis will be placed on girls education and checking wastage and dropouts. By 1983 it is envisaged that 6.8 lakh scheduled caste and scheduled tribe students would be in receipt of post-matric scholarships ; the average rate of scholarships being Rs. 1000/- per annum for student for boys and Rs. 1200/-for girl students. The hostel facilities under the centrally sponsored scheme will be expanded to cover all those district headquarters which do not have girls' hostels now. Special coaching facilities would be provided for scheduled caste and scheduled tribe students in the professional courses so as to check high rate of failures.

18.10. In order to improve the employment prospects of educated scheduled castes and scheduled tribes and to fulfil the quota reserved for them, the coaching and allied scheme provides pre-examination training to those appearing for all-India and State Service Examinations. At present, there are seven coaching centres for all-India Services, thirteen centres for State Services and two centres for all-India Engineering Services Examinations. This scheme will be expanded.

18.11. The majority of scheduled castes and scheduled tribes are agriculturists ; 51.75 per cent of scheduled castes and 33.04 per cent of scheduled tribes are agricultural labourers, and majority of whom do not own land or have marginal holdings. Improvements on the economic levels of these people will largely depend upon the benefits accruing to them from the general development of agriculture and allied sectors. Funds provided under the backward classes sector will be utilised mainly to diversify their occupations, train them for various trades and crafts and modernize their skills to make them more competitive. In the implementation of the programmes, the weakest among the backward classes will be identified and given priority. Special attention will be given to modernize the traditional occupations of scavenging, flaying, and tanning etc. to remove the stigma attached to these unclean occupations and to improve the living and working conditions of those engaged therein.

Outlay

18.12. As mentioned earlier, the outlay under the backward classes sector will be supplemental to the funds available under the general sectors of development for scheduled castes, scheduled tribes and other backward classes. An outlay of Rs. 545 crores has been provided in the Plan 1978-83 for the schemes to be implemented under backward classes sector. In addition, a provision of Rs. 350 crores has been made for special central assistance for tribal sub-plans. The details are given in the table below :—

Table 18.1 : Outlays for Development of Backward Classes

Sl. No.	Programme	Fifth plan (1974-78)	Plan 1978-83
(0)	(1)	(2)	(3)
		(Rs. in crores)	
1.	Educational Programmes . .	197.35	312.00
2.	Economic Programmes . .	50.23	65.00
3.	Other Programmes (Health, nousing, aid to voluntary organisations etc).	75.97	129.00
4.	Research & Training . .	1.32	2.00
5.	Direction & Administration .	1.60	2.00
6.	Special Programmes for Scheduled Castes	0.51	35.00
	TOTAL	**326.98**	**545.00**
7.	Special Central Assistance to Sub-plans for tribal areas	190.00	350.00
	GRAND TOTAL	**516.98**	**895.00**

Chapter 19

Science and Technology

The S & T Infrastructure

The vital role of science and technology in social, economic and technological development has been recognised since Independence and science and technology have been receiving special consideration and support from government. A large net-work of research laboratories and universities has been built up in the country, in the course of the last three decades. There now are about 900 research institutions, including universities, under the various Ministries/Departments/Agencies under the Central and State Governments, or in the private sector. The current expenditure on S & T is about Rs. 400 crores per year, which represents about 0.6 per cent to GNP (Annexure 1). This may be compared with one per cent of GNP considered by Government on the recommendation of the National Committee on Science and Techology (NCST) in 1973, or with 2 or 3 per cent spent by the highly industrialised countries. Our stock of scientific and technological manpower has been growing at the rate of about 9 per cent per year for over 20 years and is now estimated to be about 2 million. India today has the third largest complement of qualified S & T manpower in the world, next only to USSR and USA. The S & T base has also enabled the nation to build a large and varied industrial infrastructure, and India now ranks amongst the industrialised countries in the world.

Challenges of development and objectives of S & T policy

19.2. Over the years, as the S & T infrastructure has grown, there has also been a growing concern that benefits from science and technology have not reached the ordinary man, but have mostly accrued to the upper echelons of society. Further, though self-reliance has been a basic tenet of our policy during the last couple of decades, and a substantial technological competence and a capability to manufacture a wide range of industral products has been built, including in sophisticated areas like atomic energy, the development of modern industries in the country has continued to depend on borrowed technology, and this also has been a cause for concern.

19.3. The twin objectives of the S & T policy will be: (a) to secure for the people of the country, particularly those in the rural areas, all the benefits that can accrue from the acquisition and applacation of scientific knowledge and research, to remove unemployment and fulfil their basic needs, to enhance the quality of their life, and to enable them to realise their full human potential, and (b) to improve the quality and expand the quantity of the S & T effort, and harness the S & T capability for enhancing self-reliance.

19.4. It has become increasingly clear during recent years that if our S & T infrastructure is to make a greater impact in these domains the S&T activity has to be deliberately planned and purposefully directed towards the fulfilment of national goals, by enmeshing an S & T plan into the socio-economic plan. This process has barely started during the last plan period, and needs to be considerably strengthened by building well-defined linkages between the S & T capabilities of our higher education institutions, research laboratories, design organisations, production agencies, and the problems that matter. Identification and promotion of such linkages demands a greater and more precise awareness on the part of the decision-makers in each socio-economic sector at Central, State District and Block levels, of what contribution S & T could make to the improvement of products and services in the sector concerned. It also calls for a related strengthening of the S & T planning machinery at each of these levels. No less important is a change in the attitudes, value system and content and quality of the training of the scientists, in fact, of the academic community in general.

Science, Technology and the programmes of minimum needs and rural development

19.5 Science and technology hold out the promise of fulfilling the basic human needs and improving the quality of life of the people. The problem of translating it into realities and achievements, however, is not of S & T alone, but has socio-political dimensions It is, in this context, important to draw a clear distinction between two categories of problems: (a) those which can be solved immediately, using existing knowledge, possibly with some adaptation; and (b) those where research and generation of new knowledge is essential.

19.6 New knowledge is certainly necessary in areas such as new varieties of seeds, nitrogen-fixation through biological or chemical methods, biological control of pests, photo-synthesis, new uses for various local plants and other materials, re-cycling of waste products, new sources of energy, especially those suited for decentralised exploitation, new materials, improvement in the productivity of soils, better understanding of parasitic diseases, fertility control etc. However, the fulfilment of basic needs of food, health, housing, fuel, water-supply, sanitation, basic education is largely dependent on the use of existing knowledge and expertise. Therefore, what is needed is socio-political decision to utilise the S & T infrastructure and capability, which already exists, and to commit, financial, administrative and organisational resources into the priority sectors, e. g. the minimum needs programme. Recent progress in agriculture has

underlined the contributions that S & T can make to national development if the necessary levels of financial and managerial imputs are provided on a sustained basis to a priority area of social relevance. Now that these commitments are being made at the socio-political level, it becomes important to devise instrumentalities for corresponding commitments in the S & T sector and a strategy for harnessing the capability which exists, more intensively and on a wider front.

19.7. It is necessary to emphasize that application of existing knowledge to the solution of neglected problems of development, especially in interdisciplinary areas with an additional socio-political dimension, often demands highly creative and innovative efforts and an application of a systems analysis capability of a high order, which is typical of any S & T endeavour. Optimizing the performance of the gobar gas plants and integrating a widespread use of them with the use of other sources of energy on the one hand, and with the use of chemical fertilizers on the other, is an example of such a challenging area.

19.8. Our S & T effort has to be re-oriented and geared to the imperatives of development of rural areas which account for seventy per cent of the population. The tasks are manifold: the productivity of artisans and craftsmen in rural areas has to be enhanced, by upgrading existing processes, tools and techniques and improving their understanding of the technological content and the often simple science underlying them; also as a corollary, by introducing simple new processes and techniques.Optimal use has to be made of local natural resources, including agricultural wastes; agro-industries have to be developed, water supply and sanitation have to be improved, health delivery service strengthened etc. Science must provide a new philosophy for action, enabling man, irrespective of origin, to rise to his full stature.

19.9. There is an increasing emphasis on development from below, with voluntary agencies playing an important role. Universities will, therefore, have to undertake programmes for enhancing the scientific outlook, knowledge and skills of workers in existing voluntary agencies, and training a large number of young people to provide inputs into existing or new voluntary agencies. Universities will also have to reorient some of their educational programmes, including those in technology and management, to serve the needs of de-centralised development, and in general, to prepare the youth to face the challenges of development.

19.10. Developmental programmes with S & T content, will have to be used for spreading scientific awareness and temper among the people, so as to enhance their absorptive capability for S & T. In doing so, there will have to be an increasing use of regional languages, so that science may be internalized by the people, thereby improving the dialogue and communication between university educated scientists and ordinary people. In this way, problems from the field, or new techniques developed by ordinary people in the field, may be transmitted to the scientists for solution or for further development, and new results from laboratories will spread among the people.

19.11. During the last few years, several voluntary S & T groups have been active in the area of rural development, some of them with the backing of advanced S & T institutions. Such rural involvement of young scientists and technologists and their institutions such as national laboratories, universities, medical and engineering colleges, will have to be promoted through appropriate budgetary support and personnel policies.

19.12. The Government has decided to streamline the various schemes, agencies and organisations for helping village and small industries, by creation of District Industries Centres (DIC's) which should provide a package of assistance to artisans, craftsmen and small entrepreneurs. A substantial investment will be made in this programme and it will be necessary to provide adequate S & T back-up to the DIC's and to ensure a modern scientific systems analysis and management approach in their functioning.

19.13. In order to provide linkages between field problems, having an S & T content and research laboratories, it will be necessary to create some rural S & T resource centres in the districts. These will be planned, so as to provide a two-way communication between the national laboratories/universities on the one hand and voluntary agencies, Khadi & Village Industries Commission, and the newly emerging Area Planning Programmes, District Industries Centres on the other. Such S & T Resource Centres may be created by strengthening voluntary S & T groups which are already working in the field, and by encouraging and supporting universities/IITs/national laboratories to set up rural extension centres with appropriate manpower and laboratory/workshop backing. Enterpreneurs setting up testing laboratories would provide another kind of S & T backup to the rural industries. Rural banks and cooperatives etc., who have a stake in a project or an area, would also be expected to help set up such rural S & T centres.

19.14. In the above context, the recent policy decision of UGC that extension be considered as a third dimension of academic programmes in universities, equal in importance to teaching and research, represents a significant step. Apart from providing S & T backup to various rural development programmes through S & T Resource Centres, universities and national laboratories could also help in solving the problems of small-scale industries as identified and projected by the State level RD & D Committees. They could also take up specific selected industries in their neighbourhood (e.g. smithy/foundry, textiles, paper, ceramics,. . . .), survey the production practices and try to bring about improvements in techniques, processes and products.

19.15. Over a period of time, every scientific, technological and educational institution should be expected to devote a certain identifiable part (at least ten per cent in the first instance) of its efforts to programmes of minimum needs and rural development. Even high technology agencies like Atomic Energy and Space can play an important role in this domain, as was shown by the experience with SITE. They represent a concentration not only of S & T expertise but also of a systems capability and an experience of

setting up teams to handle complex projects, which can also be brought to bear on problems of rural development. In this way S & T could provide levers of social change.

19.16. In the past, the benefits of many schemes have often not reached the target populations, and one knows that in the absence of continuous monitoring, programmes often get distorted at the implementation level, and the benefits get pre-empted by those, who are already well-off, and thus do not reach the intended beneficiaries. Therefore, as various new programmes for improving the quality of life of the people are initiated, it is necessary to institute a built-in mechanism for monitoring and evaluation. Teams of natural and social scientists could be organised to make an objective assessment of the impact of these programmes on the quality of life of the target population, in terms of well-defined indicators, and such assessment should form the basis for continuous upgrading/reorientation of these programmes. Pilot projects of this kind should help in evolving an integrated systems approach to problems of rural development.

19.17. Decentralised development, with emphasis on employment generation in as many sectors as possible, implies a development strategy different from that adopted by the highly industrialised countries of today, and correspondingly, it demands self-reliance in choice and development of technologies. Interactions between the research laboratories and the productive processes around them, such as those discussed above should help generate 'appropriate technology'. Rural technology should not be taken to mean primitive technology or technology of yesterday. A determined effort is needed to take modern science and technology to villages, with a changed perspective and due deescalation/simplification of technology so that it is brought well within the material, financial and skill resources of rural people. While searching for and improving upon such technologies, which increase employment opportunities for our people, therefore, it will be simplistic and dangerous to confine indigenous efforts to relatively simple technology for rural needs and depend on import of technology in the high technology areas. We have also to ensure an appropriate mix of small, medium and large scale technologies, in a manner consistent with our long-term interests. Many heavy industries, e.g. power, steel, fertilizers and heavy chemicals, machinery and equipment, are essential for developing our rural industries. There are also many heavy industries which are essential for defence and other requirements, and we have to be ready to take advantage of progress in science and technology as it takes place. Further, 'appropriateness' itself is to be viewed as a dynamically evolving concept.

19.18. Large scale involvement of the S & T institutes and the academic community in such programmes will call for change in the value system of the academic and S & T community, with an active concern for social problems. This should show itself up through efforts to seek out problems of development in one's own vicinity, where S & T may be applied. The S & T community has to evolve its own standards of relevance and excellence, and not allow them to be distorted by international science. In particular, the career structure of discipline based science has to be transformed, so as to encourage the involvement of scientists innationally relevant activities, such as those pertaining to the development of rural areas. Academies and professional associations would have to play an important role in this regard. The Indian Science Congress Association has already taken some steps in this direction.

19.19. On the whole, optimal use of S&T for rural development will call for social activism on the part of universities and scientific institutions. Such institutions would have to study the problems of development, rural development in particular and moreover, as non-governmental concentrations of academic expertise, they would have to make an impartial in-depth analysis of various on-going programmes and experiments and help generate new models for harnessing our education, science and technology infrastructure for national development or evolve alternative strategy for development emphasising the importance of any fundamental structural reform in society that may be required.

19.20. Such participatory social activism will also help bring in greater relevance into the course/training/research programmes in universities, promote scientific humanism and thereby motivate and prepare the students better for undertaking the challenges of rural development in terms of knowledge, skills and attitudes.

S & T Planning and Implementation

19.21. Planning for S&T in relation to socio-economic objectives is a relatively new concept in India. While S & T permeate almost all areas of national activity, Science and Technology planning, in terms of objectives and programmes, processes and techniques to be developed and technological capabilities to be acquired, had until the Fifth Plan, been mostly confined to a few scientific agencies and allied Departments, in particular, Agriculture, Atomic Energy, Space, CSIR and Defence. An integrated systems approach has characterised the planning and execution of programmes in the fields of Atomic Energy and Space : building and exploiting in-house capability. identifying and using the capacity in outside R & D institutions or industry, or persuading industry to undertake fabrication of high precision sophisticated equipment. Purposeful use of research and extension has also paid rich dividends in the field of agriculture. The Department of Electronics has been maintaining an overview of the technology needs of the rapidly growing and changing area of electronics, and it is hoped that this will help promote technology and industrial development in this important sector. In other sectors, the S & T effort has remained largely fragmentary and it is important to foster coordination and make an optimal use of complementary expertise and facilities that may exist under different laboratories/ Ministries and to supplement them where necessary so as to develop a total systems capability. For example, in the area of communications, the capabilities represented by TRC, ITI as well as ECIL, ISRO and BEL and DRDO can be harnessed for a common purpose. Chemicals (including drugs, fertilizers and

pesticides) and Energy represent other important areas, where coordinated efforts are called for.

19.22. In areas other than those represented by the major agencies, a systems approach has been missing in the Ministries concerned, the S & T awareness and absorptivity for S&T inputs has therefore remained inadequate, and correspondingly, S & T tasks crucial for our economy, have often remained un-attended for want of a proper mechanism to identify these tasks and assign them to appropriate national institutions. Services in areas like health, housing, irrigation, power and meteorology have suffered as a consequence. Also, the country has remained dependent on and even subservient to imported technology in several areas.

19.23. The setting up of the National Committee on Science and Technology in 1971 was an important landmark in S & T Planning. In the closing years of the Fourth Plan and the early years of the Fifth Plan period, a major effort was put in by the NCST to prepare, for the first time, a comprehensive S & T Plan as an integral part of the socio-economic plan. This was in the form of "An approach to S & T Plan" brought out in 1973, and the S & T Plan (1974—79) itself brought out in 1974, based on a critical study of socio-economic 24 sectors. This S & T Plan identified gaps in the national S & T endeavour in these sectors, in relation to the objective of self-reliance and the S & T needs of the Fifth Plan. It provided a useful checklist of S & T programmes and projects that needed to be undertaken; however, a mechanism for enmeshing the identified S & T programmes/projects into the sectoral socio-economic plans and overseeing their implementation, monitoring and review, could only be devised midway through the Fifth Plan, when the Planning Commission started holding separate discussions on the S & T component of the Annual Plan with each economic Ministry/Department, with participation from CSIR, DST, DGTD, Department of Electronics and allied Ministries and organisation. These have helped create in those administrative Ministries where the S & T base has been weak, a greater awareness about the S&T inputs which could further their sectoral economic objectives. As a part of this process, separate S & T budget heads have been created in various Central Ministries. and Special Committees for Implementation of Projects (SCIP) have been set up. These have been important steps towards facilitating the planning and implementation of S & T programmes in various sectors, on a continuing basis. As a result, S & T allocation and their utilisation in some of these sectors have shown some increase during the last two years. Increasing attention is now being given, for example, to be enhancement of S & T inputs into areas like energy, survey and utilisation of natural resources, heavy engineering and machine tools, steel, coal, mines, mines safety, waste utilisation, khadi and village industries, small scale industries, etc.

19.24. This process will be strengthened and streamlined during the Five Year Plan (1978—83). In particular, within each Ministry, a nodal point will be identified and equipped to take responsibility for the following (in cooperation with the NCST and the Planning Commission):

(a) requirements of S & T inputs in the existing industries/services in the sector, from the point of view of improvement of efficiency of plant/services, quality of products, self-reliance with regard to inputs, including raw-materials and intermediates, upgrading technical know-how for keeping abreast of scientific and technical advances, waste utilisation, environmental control etc.

(b) promotion of horizontal transfer of know-how in the sector;

(c) identification of institutions (National Laboratories, Universities, IITs and Industrial Laboratories), some of which may lie in different sectors or under different Ministries or by privately owned, where capability to carry out S & T tasks relevant to the sector exists, and assigning such tasks to those institutions;

(d) maintaining of comprehensive registry of foreign collaboration agreements in force in the sector concerned, including information on the nature of the technologies acquired;

(e) preparation of state-of-art reports from time to time, identifying critical scientific and technological gaps in the national endeavour, and indicating where intensified long-term basic/applied/developmental research is essential in order to secure freedom from dependence, or where technological capabilities (including design engineering) have to be built in order to develop bargaining power when purchasing know-how from abroad and be able to quickly absorb, assimilate and adapt and improve upon such imported know-how ;

(f) preparation of the development profile of the sector over a ten-year period, and projecting the demands for products and services (consistent with national socio-economic objectives), assessment of the process, equipment and manpower needs, and of the technological capability that has to be built in order to meet these demands, leading to an identification of the immediate time-bound S & T tasks arising out of the forecast, and thus helping in drawing up the S & T Plan for the sector—facilities to be built up, R & D to be carried out, know-how that may have to be imported (and why) and man-power to be trained ;

(g) ensuring that the scale of investment in R & D for improvement of products/productivity/services, and for development of new products and processes is commensurate with the economic/service activities in the sector;

(h) analysis of the prevailing organisational structure and socio-economic policies, including export-import policies, followed in the sector handled by the Ministry, from the point of view of its effect on the demand for S & T inputs ; possible organisational changes or changes of policy or legislation that

would enable S & T, especially indigenous S & T, to play a more effective role ;

(i) promoting the establishment of pilot plants and suitable design engineering consultancy services with adequate expertise, where necessary ; when pilot plants are built it would be desirable to associate a design engineering firm and an industry with the research laboratory right from the beginning; so as to help later commercialization ; and

(j) in relation to the above, definition of a strategy for optimal utilisation of indigenous capability, bilateral agreements or assistance from UNDP and other agencies.

19.25 Considering the tasks to be performed at this nodal point, the nodal point will have to a small professional information, planning and analysis group which provides the technical back-up to the SCIP. It is expected that the transfer of some of the CSIR laboratories to relevant Ministries, which took place recently, will help the process of strengthening the S&T base in these Ministries. It will not, however, by itself serve this purpose unless the S & T planning and policy making capability within the Ministries is built up along the lines indicated above.

Industrial Research Design and Development

19.26. In most industrially advanced countries, RDD for industry is carried out largely by industries themselves, whereas in India, it has remained largely a government activity. The linkages between government laboratories and industry have, in general, been weak, design engineering work to supplement the development of new processes/products has not received adequate attention till recently, and in the absence of a mechanism to integrate and coordinate the capabilities and efforts in different institutions which may lie in different sectors or under different Ministries, or under different ownership (private/public), our industrial development has largely depended on imported technology, in spite of the considerable S & T infrastructure that has been built.

19.27. While strengthening the linkages and locating a nodal point for planning and coordination, as discussed earlier, steps have to be taken to step up the inhouse RDD by industry and to create an environment conducive to such RDD within the industry, since industrial RDD can most efficiently be carried out within the industry. Inhouse RDD is also vital for meaningful co-operation between national laboratories and industry.

19.28. While expenditure on RDD in industry has shown some growth in the last few years (Annexure II), according to the latest available statistics, only about 15 per cent of the total national S & T expenditure is met by the industry, both public and private. Industry has to increase its commitment to RDD, not only from the point of view of achieving self-reliance, but also from the point of view of modernizing the technology of established units and improving their performance to international standards in quality, cost, relevance in the markets, and using any imported technology as a spring-board for the development of competitive new technologies.

19.29. The magnitude of the industrial S & T endeavour has to be commensurate with the annual turnover of the industry, its growth-rate, and the extent of its dependence on foreign technology, and any substantial import of technical know-how has to be accompanied by concomitant R & D effort that is necessary in order to absorb, adapt and improve upon the borrowed technology.

19.30. Government has sought to promote RDD in industry through several measures like liberal incentives for setting up inhouse RDD units, free licensing of industries based on indigenous technology, liberal fiscal incentives, provision of increased investment allowance for using indigenous technology etc. NCST has recently constituted a committee to review and examine these measures.

19.31. The Public Sector had also neglected RDD until recently. This lacuna is now sought to be corrected by purposeful inputs for setting up enhancing the inhouse R & D capability in various Public Sector undertakings. The recommendations made recently by a Working Group on R&D in Public Sector undertakings, will form the basis of further action in this domain. The large size, technological complexity and potential growth of public enterprises offer exceptional opportunities for profitable RDD inputs of a high order.

19.32. There continues to be a genuine barrier against the use of indigenous technology, arising from the fact that the know-how from an industrial R&D laboratory (whether inhouse or not) does not represent 'a proven process', and therefore the industrial enterprise accepting it takes a certain amount of risk. There are two possibilities to over-come this barrier : the Government itself deciding to set up the industry based on the indigenous know-how; or the Government providing some risk-insurance for the first trial of the new technology. Such risk-coverage is not unknown in other countries. Recently, the NRDC has started providing some risk-coverage by providing part of the equity but the scale and range of its operation have to be very considerably enhanced.

Indigenous and Foreign Technology—Self-reliance

19.33. The country now has a well-developed infrastructure of R&D and design engineering organisations. So the future development of industries in India must be based on indigenous technology as far as possible.

19.34. Decentralised development calls for greater reliance on indigenous technology; R&D aimed at optimal use of our factor endowments (local materials, abundant manpower) is not likely to be carried out in other countries, where technologies develop in the context of their own social environments, raw-materials and product demands. Our national S & T institutions will therefore have to play an increasing role in moulding technology and adapting and interfacing it with our structural variables.

19.35. While rural-oriented technology will have to be developed indigenously, it will be dangerous to adopt a policy of concentrating indigenous R & D mainly on rural technology, and of buying high technology from abroad. Apart from the importance of high technology in relation to certain critical sectors of our economy, high technology has a confidence-building role and spin-offs not only technologically but also in terms of approach to the solution of complex national problems.

19.36. Self-reliance is not a distant goal, but an attitude and a strategy towards decision-making right now. In S & T it implies a judicious mixture of indigenous R & D and imported know-how, in such a manner that the initiative is always in our hands. It is not the acquisition of technology from abroad as such that is bad, but the way we have done it in the past has done us harm, since among other things, often no R & D effort was made to get rid of the dependence on outside technology.

19.37. Technology would have to be imported in these sophisticated and high priority areas where Indian skills and technology are not adequately developed. However, even in the case of such imports, the aim would be technological self-reliance. In such areas, the Government's preference will be for outright purchase of the best most appropriate technology available, and then adapting such technology to the country's needs. Indian firms or corporations which are permitted to import foreign technology would be required to set up adequate R & D facilities so that the imported technology is properly adapted, assimilated and improved upon. This will be helped by associating the appropriate R & D laboratories/design engineering agencies with the import of technology.

19.38. Foreign investment and acquisition of technology necessary for India's industrial development would be allowed only on such terms as are determined by the Government of India to be in the national interest. In areas where foreign technological know-how is not needed, existing collaborations will not be renewed and foreign companies operating in such fields will have to modify their character and activities in conformity with national priorities within the framework of the Foreign Exchange Regulation Act. To guide entrepreneurs, Government will issue a revised illustrative list of industries where no foreign collaboration, financial or technical, is considered necessary since indigenous technology has fully developed in those industries.

19.39. Any imported technology should be consistent with our socio-economic priorities. Therefore, the scrutiny of any proposals for technology import must include study of its possible impact on employment and consumption patterns. One simple criterion should be to leave out what we can afford to do without, as in the case of many consumer products.

19.40. Measures for minimising the baneful influence of restrictive privileges like trademarks and proprietory names, which have hampered the normal development of R&D, and its utilization, have to be given careful consideration.

19.41. There are areas in which expertise and technological competence relevant to a total system is divided among different R & D laboratories/industries. In such cases, a conscious effort must be made to adopt a national consortium approach, rather than invite foreign collaboration or buy equipment from abroad.

19.42. There are high technology areas like atomic energy, space, defence, electronics and telecommunications, marine resources, where self-reliance has become increasingly important. There are other areas like agriculture, fertilizers and pesticides, health, coal, mining, oil exploration and exploitation etc., where the volume of production and growth of industry in the country necessitate substantial R & D inputs, which can also become cost-effective. It is necessary to define a mainstream of such sectors, and specific problem areas within them, where, as a part of a long-term planning profile, R & D resources will have to be concentrated, so that the R&D effort may be carried out on a viable scale, with well-defined time-targets. In such areas, foreign know-how/equipment must not be imported in a manner that would cripple indigenous efforts. A policy of taking any short-term decision to buy technology from abroad, only in the context of a long-term technology perspective, becomes all the more necessary now, when we happen to have a comfortable foreign exchange position.

19.43. It is also important to maintain a sufficiently strong R&D base in many other areas, especially those in which knowledge and techniques are rapidly advancing, in order to maintain a base for making a judicious decision with regard to equipment know-how to be purchased, and to secure favourable terms of purchase. Our technological and industrial strategy must respond to the objective of creating a technological and industrial base which has to be sufficiently diversified and sufficiently strong to withstand the vagaries of international trade and aid relationships.

19.44. A technology policy statement is under preparation by the NCST.

Basic Research, Universities

19.45. The main thrust of the S & T policy will be in increasing the direct relevance of national S & T efforts in relation to identified socio-economic goals and tasks. Relevance and excellence, however, in particular, in basic sciences, are not mutually contradictory but can reinforce each other.

19.46. Application of S & T, demands in the first instance, a strong foundation in basic sciences. Therefore, the pursuit of pure science, carried out at the highest level, where it get its justification in terms of its relevance to the advancing frontiers, will be encouraged in all disciplines. Fundamental research is important, not only for the exciting adventure and challenges, but also because it helps to establish and maintain the highest tradition of intellectual inquiry, to develop an indigenous culture of science, and to create the capability for acquiring new knowledge with self-confidence. It therefore has an important role to play in training scientists and technologists and thus developing the S & T capability.

19.47. On the other hand, the scientific community has to review the ongoing research programmes themselves, and examine their relevance, in terms of the likely impact either on the advancing frontiers or on the problems of rural/industrial/economic development, if not both. Fragmentary, peripheral research programmes will have to be discouraged by the academic community itself, within a university/laboratory and within the country as a whole, by evolving its own standards of excellence and relevance. This is very important for preserving the autonomy of universities/laboratories. Academies and professional associations could also play a very useful role in this regard.

19.48. Research in Universities did not get much support until the Fifth Plan period, barring the UGC programme of Centres of Advanced Study. The situation has changed with the creation of a budget-head for research and the establishment of the Science Research Council under the UGC, and the setting up of the Science and Engineering Research Committee under the Department of Science and Technology both during the Fifth Plan period. The increasing support to research has to be purposefully utilized by the universities, to develop thrust areas and schools of research, which should compete with national laboratories and internationally. PhD programmes should follow from such thrust areas and should not limit the character and scope of the investigations undertaken.

19.49. Historically a large number of laboratories and institutes, in the natural and social sciences, have been set up outside universities and with inadequate linkages with industry. Universities, as mother institutions, have suffered in the process. The concentration of expertise and facilities in these institutions has to be harnessed for improving the quality of education and promoting our socio-economic goals. While efforts will be made to establish linkages for this purpose, it is time to adopt a policy that when new institutes are contemplated they will be either within the university system or attached to the appropriate industry, unless there are explicit reasons to the contrary.

19.50. However, for their part, University structures will need to be re-examined and altered, in order to accommodate and foster the emergence of autonomous institutes within the university system.

19.51. While the concentration of effort in Universities will continue to be in basic sciences, it will be useful for university team (as for teams in other laboratories) to take up some goal-oriented time bound projects so as to enhance the sense of purpose, and time-and cost-consciousness within the scientific academic system.

19.52. In our country, the mobility of scientists between scientific institutions, or between scientific institutions and users of S & T, is extremely limited. There exist various schemes to promote mobility, but they have not made much impact. More vigorous efforts to promote mobility are called for. It will also be useful for universities/laboratories to evolve a convention whereby every scientist is required to spend some period every few years at another institution, including possibly in industry.

Coordinated Development of Test facilities

19.53. Industrialisation has created a growing demand for test facilities of various kinds. Standardisation, testing and analysis of products, and calibration of testing and measuring instruments are essential for quality control and assurance, industrial development, export promotion and protection of the citizen from health hazards, food adulteration and environmental pollution. While existing test facilities at National Test House, Indian Standards Institution etc. will be strengthened, in view of the growing need for test facilities of various kinds, steps will be taken to coordinate the growth of such facilities and draw up a policy frame and perspective plan for the development of test services in the country, at the national, district and block level, keeping in view the needs of the growing decentralised sector in the production and marketing of goods.

19.54. For this purpose, precise and comprehensive information will be compiled and continuously updated with regard to (a) the standards and norms laid down by various agencies, and (b) testing facilities existing and readily available to industries and other users, so that the individuals or organisations wanting their products tested may easily locate the laboratory rendering such services.

19.55. Further, various agencies concerned with quality control/certificate marking schemes such as ISI, NTH, Drugs Control Office, Weights and Measures Directorate, Pollution Control Boards, industries promotion organisations like Small Scale Industries Organisation, KVIC, Department of Electrionics etc. are increasingly encouraged to recognise/register suitable laboratories of one another, so that mutual optimal use of test facilities in the country may be possible and seasonal fluctuations on load of work may be shared.

19.56. An overview and coordination as above will help in determining the type, location and level of testing facilities that require to be created or strengthened in order to meet the internal and export requirements. It is proposed to create an institutional arrangement for such an overview and coordination, and for screening proposals for augmentation of test facilities.

19.57. It should be possible to generate a self-employment programme for the educated unemployed, while creating the wide range of simple test facilities that will be needed in the dispersed rural areas.

19.58. Increasing stress will be laid on requiring various products to be certified from health and safety points of view, and ensuring that measures in this regard are adequate, especially in relation to food, water supply, drugs, building materials and electrical appliances.

R & D efforts at the State level

19.59. A substantial part of the responsibility for rural developments falls on the State Governments. The increasing investments being made in this sector have to be matched by creating/strengthening suitable S & T organisations at the State level, so that a systems approach may be brought in, and the mechanisms

of implementation of various programmes are analysed and strengthened. The planning of S & T in States in an integrated manner has been attempted during the Fifth Plan period when State Committees for S & T were constituted, at the instance of NCST, in five States. 17 State Research Development & Design Committees have been set up under the joint auspices of Ministry of Industrial Development and the Department of Science & Technology and these assist the Small Industries Services Institutes (SISI) established by the Small Industries Development Organisation (SIDO). These RDD Committees, usually headed by the Director of a National Laboratory in the region, receive and scrutinise problems of an RDD nature which are posed by the industries in the small scale sector. The Committees have also brought out information booklets on R & D facilities available in the region. The identified problems are referred to appropriate national laboratories, engineering colleges or technical institutions for solutions. Laboratories of the CSIR have also been specifically asked to pursue such problems of an *ad hoc,* short-term or long-term nature, if referred to them by the State RDD Committees. It is necessary for the remaining States also to set up State Committees for S & T, as nodal points in the State Planning Boards, and for all of them to be strengthened so that they may be able to play a more dynamic role.

S & T Activities Sectorwise

The salient features of the programmes on Science and Technology in the various sectors of the Plan are indicated in the following sections.

Agriculture, Fisheries, Animal Husbandry, Forestry

19.60. Education, Research and Extension in this area have come closer and this has led to fruitful results. The major thrust of agricultural research will continue to be on the development of techniques for bringing about a further improvement in terrestrial and aquatic productivity without detriment to the long-term production potential of soil and water. In order to derive fullest benefits from the S & T expertise and infrastructure, an integrated Agricultural Research Service was formed, covering agricultural scientists in all central research institutions. Direct research farmer linkage is sought to be strengthened though Krishi Vigyan Kendras, for faster transfer of technology to farmers.

19.61. Basic research in agricultural sciences, has remained meagre, and will be substantially strengthened through the establishment of National Research Centres of Excellence.

19.62. Efforts will be made to shift research programmes from irrigated/water-intensive crops towards the crop problems of arid, semi-arid, as well as highly humid hill and other problem areas so that a larger proportion of the country's rural population and cultivated areas may benefit.

11.63. State Agricultural Universities will be expected to assume progressively larger responsibility of research and extension education in their respective States. State Governments will be requested to assume greater responsibilities in supporting agricultural research.

19.64. Research efforts will also be intensified in agro meteorology ; biological control of pests and diseases ; nitrogen-fixation in soils; improving photo-synthesis; recycling techniques for organic residues ; development of intermediate technology for optimal use of human, animal and oil/electrical/mechanical farm power ; balanced agro-climatic farming ; systems approach to development of optimal mix of crops, animal husbandry, horticulture, fisheries, plantation and forestry, post-harvest technology etc.

Irrigation

19.65. S&T activities relating to irrigation are carried out by institutions like CWPRS, CSMRS and some of the State Research Stations. These include investigations and research relevant to river valley projects. Some of the important emerging programmes pertain to setting up National Institute of Hydrology, a unit for studies on the applications of remote sensing/satellite technology for water resources, and systems engineering for integrated water resources development.

19.66. Along with increased outlays on irrigation, it is important to step up Operations Research and R & D activities relating to optimum utilisation of existing irrigation systems. Among the problems that will receive attention are the problems of water-logging and drainage congestion, and the difficulty experienced by farmers in receiving timely and adequate water supply from the irrigation systems. In depth studies will be carried out, with proper systems analysis, so as to devise strategies for ensuring that the large investments made on the existing irrigation systems will yield commensurate benefits in respect of services rendered to the farmers, and in respect of production from irrigated agriculture. Steps will be taken to develop technical expertise, especially in the States, with regard to identification of deficiencies of the irrigation systems and their management, and formulating a comprehensive need-based modernisation programme.

19.67. For a number of projects there is a considerable scope for optimising the benefits from conjunctive use of surface as well as ground water. There is need for detailed studies on re-charging the ground-water in certain areas by diverting flood waters whenever available, so that proper equilibrium/balanced conditions are maintained in the sub-soil strata.

19.68. Under I.C.A.R. there is need to accelerate research techniques for water use in irrigation commands. There is also considerable scope for research activities in respect of evolving cheaper technology for ground water development for different hydrogeological settings and formations, including design of water lifting devices etc. These would be handled by the Central Ground Water Board and the I.C.A.R.

19.69. R&D on cheaper materials and economic designs for execution of projects is also an important area.

19.70. Use of remote sensing techniques in respect of surface and ground water hydrology, including tidal effects, and reconnaissance soil surveys, is assuming greater importance in planning of irriga-

tion and flood control projects, and should receive more attention in the coming years.

Meteorology

19.71 The Indian Meteorological Department is one of the oldest scientific establishments in the country, and has been concerned with providing meteorological services. The Department has built a considerable infrastructure of facilities for observations and data forecasting. In the Fifth Plan period, there has been some build-up and modernisation of the observatories and of computorised facilities for forecasting. Linkages were established with world meteorology programmes.

19.72 For the first time, a large time bound project has been initiated viz. Monsoon 77 and Monex 79 where the behaviour of the monsoon system would be studied in an integrated manner; this programme would be in collaboration with the WMO in 1979 and would involve a simultaneous participation for studies on the ocean, surface based observatories, satellites based systems and instrumented research air craft.

19.73 A meteorological package is an important component of the satellite based facilities of the INSAT-I system, forming part of the space programme.

19.74 Recently a Review Committee has made comprehensive recommendations pertaining to training, instrumentation, R&D capability, and build-up of man power. This review will help strengthen the instrumentation base and the further development of meteorological services.

19.75 The main thrust of the programmes in the next five years will be in the areas of hydro-meteorology linked to utilisation of water resources, development of meteorological services which are user-oriented in the areas of fishery, agriculture, aviation etc., modernisation of instrumentation, space meteorology, meteorological programmes linked to oceanography and development of seismology.

19.76 It is intended to carry out a few case studies, evaluating the use to which meteorological services and information is put to by the users, and to develop an appropriate costing of the services rendered, linked to the quality and quantity of the services.

Space Science and Technology

19.77 The main driving force of the Indian Space programme continues to be the development of indigenous competence and technological base for using space systems, in the areas of communications, and remote sensing with applications in meteorology, water management, and in the survey of natural resources in general. By the end of the Fifth Plan indigenous capability for design and development of rockets, launch vehicle systems and related propellants, design and fabrication of satellites, and test facilities commensurate with the needs of rocketary and satellite development have been built up. The first Indian satellite Aryabhata was launched during this period, and is operating satisfactorily. The Satellite Instructional Television Experiment was completed, and has given valuable insights into the problems of using TV for mass communications.

19.78 The main thrust of the Indian Space programme in the next five year period will be oriented to completion of the Experimental Remote Sensing Satellite; development of the Rohini Satellite linked with the launching of SLV-3; fabrication of the APPLE space craft for launch on a developmental flight of European launcher, Ariane; experiments on communication systems, and R&D on development of sensors required for space applications; and a phased programme of entering into the development of an operational system for a Remote Sensing Satellite and related launch vehicle technology.

19.79 The integrated Indian national satellite, INSAT-I, system would be procured and launched by a contractual arrangement and the associated capability will be built up, for operational requirements and services. Programmes pertaining to replacement of this satellite would receive attention.

19.80 Activities in the field of social research will continue, especially with a view to application of the advanced technology systems to rural areas.

19.81 ISRO will continue to implement its philosophy of establishing formal links with various relevant industries and making maximum use of facilities in national industries and laboratories. Programmes of research in Space Sciences and related basic sciences will continue to be supported, including ISRO support to research outside ISRO, especially in universities and academic institutions.

Atomic Energy

19.82 In the area of atomic energy, the development of domestic technology, through the creation of a strong R & D base linked to development efforts for nuclear power generation and related industrial capability, has paid dividends. Thrust of the perspective planning of the research and development efforts would be oriented to the further upgradation of the technology and industrial capability and to the application of the technological fall out from R&D efforts. In the context of increasing difficulties in procuring materials, equipment and know-how from abroad, there has to be a great emphasis on self—reliance and the R & D efforts envisage enhancement in the engineering capabilities for design and performance of nuclear power reactors, including fast breeder reactor technology and work on specialised materials and systems needed for the nuclear power programme. Other R&D areas of importance are health and safety aspects of the nuclear industry, extensive application of radio isotopes and radiation facilities in agriculture, food preservation and medicine, industry and sewage treatment, Plutonium enriched fuels for light water moderated reactors and thorium based fuel for thermal reactors, and laser technology for isotope production, are some of the new important programmes envisaged.

19.83 Variable Energy Cyclotron, which is a major research facility in nuclear physics, has been commissioned recently and basic research in frontier areas of mathematics, theoretical physics, solid state physics, radio-astronomy, molecular biology, cosmic radiation, radiation medicine linked to cancer research etc. will continue to receive strong support.

19.84 There will be increasing support to universities for basic research and for R&D related to national programmes in atomic energy, so as to help strengthen the infrastructure capability of the university system and develop a broader national base for expertise in areas of interest in the atomic energy programmes and draw upon it.

Department of Science and Technology

19.85 The Science and Technology planning effort was given an impetus with the setting up of the National Committee on Science and Technology and establishment of the Department of Science and Technology in 1971. The Department plays an important role in initiating a number of research programmes in the multi-disciplinary and new emerging areas, and coordinates and formulates programmes of national relevance which are implemented by a number of organisations. Thus, primarily, it has been promoting and accelerating inter-disciplinary, multi-institutional research and has been the nodal agency for international cooperation in the field of science and technology with several countries. Besides, it is also promoting the utilisation of indigenous technology.

19.86 The Department of Science and Technology has two apex bodies, namely, the National Committee on Science and Technology and the National Committee on Environmental Planning and Coordination. One of the important terms of reference of the NCST is the formulation and implementation of Government science and Technology Policy, with a view to ensure benefits to the population from the application of Science and Technology. While doing so, priority has been given to conservation of natural resources, especially for the speedy development of rural areas. The broad terms of reference of NCEPC include identification and investigation of the problems of preserving or improving environment in the country.

19.87 The current programme of the Department fall under three categories, those partaining to the management and development of scientific institutions like the scientific surveys and certain scientific institutions in the area of basic research; development and implementation of grant-in-aid programmes in various inter-disciplinary and or emerging areas; and setting up of institutional facilities like National Remote Sensing Agency (NRSA), Ocean Science and Technology Agency (OSTA) and National Information System for Science and Technology (NISSAT), for use by various Departments/Institutions/Agencies in the country.

19.88 Over the last few years, mechanisms for planning, implementation and monitoring of S&T activities are being geared up within Ministries, in which DST has also played a catalytic role. This has been a slow process and in the meantime, the DST has played on active role in nucleating R&D activities in emerging areas like new energy sources, environment, waste-utilization, new fibres and composites, bio-engineering, enzyme engineering etc. and in the area of instruments development. It is expected that as the S&T capabilities within the Ministries concerned are strengthened, they will be able to absorb the expertise so developed and take the responsibility for commercializing the results thereof and handling such programmes themselves. DST would, however, continue to play an important role in identifying and initiating R&D activities in emerging areas.

19.89 The programmes to build up the infrastructures of NRSA, OSTA and NISSAT will be strengthened considerably during the Plan period. The DST also expects to enlarge the scope of Science and Engineering Research Committee to support S&T programmes related to rural technology development.

CSIR

19.90 The Department also deals with matters connected with the Council of Scientific and Industrial Research.

19.91 During the last 30 years, CSIR has built up a substantial infrastructure in the form of a wide range of national laboratories and has contributed to building a strong technology base in the country. More than 1000 processes have so far been developed and released to the industry by CSIR laboratories, and of these over 400 processes have gone into commercial production, the total production of which is over Rs. 400 crores per year. A special mention must be made of the area of pesticides and ferrites, where public sector plants have been set up based on indigenously developed technologies.

19.92 A missing link in the process of total innovation chain is the design engineering package, from the point of view of commercialisation of R&D results. Laboratories, whose R&D is directly linked to manufacturing activities, need to acquire a nucleus of design engineering capability which can interact effectively with professional design engineering companies/organisations in order to scale up the process first to the stage of pilot plant and then to commercial manufacture. When a process has come to a commercial scaling up stage, prototype plants will be set up, with the involvement of agencies like the DGTD and the prospective manufacturer/NRDC, so that the eventual user of the process/product is fully committed to the exploitation of the research results.

19.93 Research and development activities at CSIR laboratories may be divided into five categories (a) National capability building programmes at the advancing frontiers, in basic or applied research ; (b) all-India inter-agency, inter-laboratory projects with identified techno-economic goals, which draw upon the inherent multi-laboratory, multi-disciplinary strength of

the CSIR system; (c) programmes undertaken as part of national programmes of interest to other agencies like AEC, ISRO, ICAR, Defence etc ; (d) projects sponsored by the industry ; and (e) programmes of regional interest, including those designed to help small scale industries.

19.94 Research at the highest level, at the advancing frontiers, in well-defined thrust areas, will continue to be supported. Links with the industry will be strengthened and efforts made to identify an increasing number of major coordinated projects of direct interest to industry for adaptation and improvement of processes or technology, or for the development of new products and processes. Coordinated projects in areas of emerging technological importance will also receive special attention.

19.95 Considerable amount of old equipment in CSIR laboratories is due for renovation. While acquiring new equipment, the needs of the major thrust areas and coordinated projects undertaken in the light of national priorities will receive special consideration.

19.96 CSIR has set up polytechnology clinics in some States for establishing links between the industry and the research laboratory. Efforts are being made to develop some pilot projects for providing technological back-up to voluntary field agencies working in rural areas, KVIC, small scale industries, District Industrial Centres, Area Planning Programmes etc. These will be supported during the Plan. In this way, the CSIR is expected to play a more dynamic role in the development of technologies appropriate to the rural areas. Also linkages of the CSIR laboratories with the user Ministries/Departments, Universities, IITs and industries would be further strengthened.

19.97 The contribution of cooperative research associations requires careful review, in order to ensure that they will be more purposeful in satisfying the basic needs of the industry, especially in the small scale sector.

Heavy Industry

19.98 In the earlier programmes, the thrust of industrial development was oriented to setting up the infrastructure for production, and consequently relied heavily on technology imported through foreign collaboration. While some R &D infrastructure was simultaneously built up through national laboratories, there has now been an increasing realization that this has to be supplemented by in-house RDD capability Correspondingly, relevant facilities are being built up in the heavy electrical industry, mother machinery industries, machine tools industry etc. Significant achievements in this area pertain to the setting up of the Welding Research Institute, Ultra High Voltage Laboratory, testing centre for automobile ancillary industries and research activities pertaining to the development of some machine tools at HMT and Central Machine Tools Institute (CMTI). Work is progressing on the Corporate R & D Complex of BHEL. R & D programmes of other public sector undertakings in the area of heavy engineering, mining and allied machinery, pumps, other structural and chemical equipments are emerging and will be supported.

Large, Medium and Small-Scale Industry

19.99 R & D efforts have also been initiated, during the last plan period in the areas of instrumentation, photo films, paper industry, artificial limbs manufacture and small scale industries. Special emphasis will be given to research programmes and institutions for support to cottage and village industries. These programmes include the establishment of some R & D centres or institutional facilities like the Coir Research Institute, Hand Tool Institute etc. Programmes of S & T support to the small-scale and village industries will be pursued more vigorously during the Plan. In particular, efforts will be made to improve/develop implements, machinery, processes through S & T activities, so as to promote the industries in the cottage and small scale sectors and reduce the drudgery and increase the earning capacity of the workers in these sectors.

19.100 In the past, R&D efforts in this sector have not been commensurate with the size of the investments and the turn-over. They were primarily undertaken in the national laboratories like NML, Regional Research Laboratory (Bhubaneshwar), RRL (Jorhat) etc. The formation of MECON with design capability to meet the needs of the steel industry and an R & D Centre under SAIL are important developments during the last plan. The Steel R&D Centre will be strengthened during the Plan period. The thrust of the R & D programmes has been related to up-dating current technologies in the operating plants and developing new technologies for adoption after appropriate assessment. The R & D efforts have led to improvements in lining life of LD convertors, and computerised control has led to increased yields in billet cutting operations. In addition to such specific technology development programmes linked to performance improvement in the plants, the R & D programmes in perspective envisage aspects relating to modernisation, improvements in utilisation of lower quality coking coal resources, coal dust injection, twin hearth furnance practices, development of direct reduction technology, beneficiation of iron ore, optimising the refractory systems in the steel plants and savings in energy usage. A semi-commercial scale plant for developing sponge iron technology using solid reductants is being put up as joint project with the Andhra Pradesh Industrial Development Corporation.

Chemicals and Fertilisers

19.101 Of the industry related research in the CSIR laboratories the largest is in the area of chemicals. The linkages between R & D laboratories and the industry have also been relatively better in this sector. The chemical industry is, however, a large and very rapidly growing sector of our economy, covering a wide spectrum including fertilisers and pesticides, drugs and pharmaceuticals, oils and fats, surface coatings, polymers and resins, and various intermediate chemicals. Technology development programmes have not been commensurate with the size of investments and the wide range of products and processes involved. Until recently, S & T programmes have been mostly confined to the national laboratories, though in recent years, R & D work has been growing in the

public and private sector industries, in particular in the Planning and Development Division of the Fertiliser Corporatiton of India, in the laboratories of the Indian Drugs and Pharmaceuticals Ltd., and the R & D Centre of the Hindustan Antibiotics Ltd. This process will be strengthened. Smaller industries will be encouraged to create small but high level S & T groups, so that they may have an in-house awareness of the state-of-art, and thereby be able to communicate effectively with universtiy and national laboratories.

Mining and Mines Safety

19.102. R & D activities in the mines and mining sector over the last two decades were carried out under Geological Survey of India, some of the national laboratories, and to an extent at the Universities. The thrust of these programmes was on creating the infrastructure for survey of mineral resources, beneficiation and agglomeration, and some analytical exercises. Since the fifth Plan period, and R & D infrastructure is being built up under some of the public sector agencies, such as Bharat Gold Mines, Hindustan Copper, Hindustan Zinc, Indian Bureau of Mines and Bharat Aluminium Company, filling up the gaps in beneficiation and ore dressing facilities. Specific R & D schemes have been undertaken in the area of copper refining, recovering scheelite from waste, study of rock bursts, petro-mineralogy etc. Apart from further strengthening of the R & D base, the thrust of new programmes will be on new mining methods, beneficiation techniques, establishing Geo Data Banks and on evolving better linkages between the programmes in the educational institutions and the needs of the mining industry.

19.103. R & D in the field of mines safety has received poor attention in the past. The statutory responsibility for mines safety measures falls within the purview of the Ministry of Labour which has an organisation viz., Directorate General of Mines Safety (DGMS) for this purpose. This focal point is expected to advise the Government on mine safety measures and develop the necessary capabilities in terms of the hardware, software and standards. The need for augmenting the S & T capabilities of DGMS has been stressed during the last Plan period. Apart from this, contractual research on industrial health, mine safety etc. will also be supported in other research institutions. R & D related to development of mines rescue apparatus will also be supported and the development of specific equipments will be linked to efforts to productionise the same. Recently a Committee has gone into the needs of electronic instrumentation for mines safety, and its recommendations are being implemented.

Electronics

19.104. Electronics industry is characterised as a fast changing industry where the technology changes in five to six years time. Up to the end of the Fourth Plan period, however, R & D efforts in this area were largely confined to programmes undertaken under different scientific agencies and restricted in scale & scope. Since the beginning of the Fifth Plan period, the Department of Electronics has maintained an overview of the electronics sector as a whole, through the preparation of an Electronics Plan for various Ministries/Departments, and identifying the S & T needs with regard to materials, components, equipments and systems.

19.105. The Department of Electronics has adopted the following approach for development of the S & T base in the country : (a) identification of areas where technological gaps exist within the framework of the national requirements, assessing the capabilities and identifying the strong points of various organisations engaged in R & D in electronics and financing project at appropriate place with proper monitoring and evaluation ; (b) development of technical competence in carefully selected areas relevant to the future growith of electronics and planning for their phased introduction into the industry ; (c) promoting R & D units within both the public and private sectors; (d) identification of areas requiring import of know-how at the R & D and production levels, so as to conform to financial and time targets laid down for the growth of the electronics industry; and (e) ensuring that the know-how developed in the country matures into production.

19.106 The technology development programme of the department of electronics is implemented through its Technology Development Council, and its working groups, which sponsor R & D schemes in the areas of materials and components, consumer electronics and instruments, computer systems and applications, control systems and industrial electronics, as also communications and broadcasting systems.

19.107. The National Radar Council has prepared a technology plan in the area of radars, sonars, navigational aids and underwater electronics and identified several RDD and manpower training projects for support at R & D institutions, universities and industrial laboratories.

19.108. R & D projects of strategic self-reliance in Defence Electronics are also supported by the Department of Electronics.

Communications

19.109. The S & T activities under this sector were substantially strengthened during the Fifth Plan period, by re-defining the role of the Telecommunications Research Centre and the inhouse R & D of Indian Telephone Industries, and Overseas Communications Service, in relation to produce and service needs of the sector. RDD needs of Hindustan Teleprinters Ltd., of the postal services and of Wireless Planning Organisation are also receiving increasing attention. RDD has been lagging behind the equipment needs in this rapidly expanding field. However, it is now expected that a substantial fraction of the communications equipment produced in the country in coming years will be based on indigenous R & D (telephones, microwave antennas, earth-stations etc.).

19.110. There has been a growing use of telecommunication systems and equipment outside the Ministry of Communications, e.g., in ONGC, Railways, Space, Coal, Meteorology, Defence etc.; also the

technological capability is spread under various departments of the Government. Correspondingly, there is a need for an over-viewing mechanism to ensure an integrated and cohesive programme at the national level.

Information and Broadcasting

19.111. Planning and implementation of R & D programmes pertaining to I & B started very recently and the R & D infrastructure needs considerable strengthening. The R & D programmes have to be linked with the present and long-term requirements of Akashvani and Door Darshan, for components, systems and sub-systems.

19.112. It is also necessary to undertake some software studies; for example intensive Operations Research Studies, jointly with the Ministry of Educatiton, relating to the effective use of mass media for education, especially in relation to the national priorities in adult and primary education; exploration of innovative uses of the media for increasing the S & T awareness of the people and increasing their participation in the development programmes etc.

Shipping and Transport

19.113. Except for Railways, which has a Research Development and Standardisation Organisation carrying out R & D relevant to its needs, and Roads, R & D in the transport sector has not received much attention so far.

19.114. R & D programmes of the road sector are being directed towards solving problems of the rural highway system consisting of primary roads and feeder roads. In this context, the imperatives arising from the decentralized industrial strategy and the policy of discouraging growth of big cities, will be taken into account. Emphasis will be on survey and evaluation of locally available materials, and study of cheaper designs for highways.

19.115. There has to be a greater co-ordination between the research on roads and the large investments that are being made to improve the roads system. Further, since road-building is an important activity under famine-relief and employment guarantee schemes, studies related to the optimal use of these schemes for creating durable assets are also important.

19.116. Inland water transport is a potentially viable but neglected sub-sector. Some R & D relating to it is now getting initiated.

19.117. A Central Marine Research and Development Organisation is being set up to carry out R & D related to the needs of the shipping industry.

19.118. A high level Committee to recommend an integrated transport policy is being set up shortly. This Committee will also be asked to indicate research priorities in the area of transportation.

Housing

19.119. In the areas of housing, construction, public health engineering, urban development and town planning, several institutions have been functioning under the Central Government, as also some of the States, as for example, the Central Public Health Engineering Organisation, National Building Organisation, Town & Country Planning Organisation, Hindustan Housing Construction etc. Investments in R & D efforts is marginal, considering the total expenditure in this sector and the complexities of the problems that have a direct impact on the quality of life of the people.

19.120. R & D on housing has to be directed to the very difficult problems of bridging the large gap which separates the housing needs of the poor, and the capacity of the country to build dwellings on the basis of existing concepts, norms and practices. Development of really low-cost construction technology through the use of cheaper local materials will be given highest priority. Increasing attention will also be paid to RDD related to an integrated approach to urban development, taking into account the complex problems of population density, transport, water supply and utilities, pollution and environment protection etc. Links between R & D and investment decisions have also to be strengthened.

Energy

Coal

19.121. The developments in the areas of surveys, exploration and mining pertaining to coal, which is an important resource base for the country, for power and for industrial activities, have been significant during the last plan period. However, the R & D base has not been commensurate with the large investments, turnover and employment in the coal sector. S & T programmes pertaining to coal were carried out under the national laboratories as also the survey and exploration agencies of the Government. The R & D investments by the private sector have been rather negligible. During the Fifth Plan period, with the mining and related industries coming within the purview of the Government, R & D in this area has received greater attention, resulting in the setting up of the Coal Mine Planning and Development Institute (CMPDI) and initiation of R & D programmes linked to the needs of this sector. Integrated programmes pertaining to occupational health, methane drainage from gassy mines, coal classification, coal utilisation, hydraulic mining, and geophysical logging are areas which are receiving increasing attention. An integrated approach to the development and utilisation of technologies for using coal based materials in chemical industries like fertilisers, coal gas as reductant, improvement in thermal efficiency of coal gas through MHD are other important national programmes.

Power

19.122. The RDD efforts in the area of energy development and utilisation have been insignificantly small in the past. In the previous plan period programmes were undertaken for development of the infrastructure capabilities of the Central Power Research Institute and for funding programmes related to alternative sources of energy such as geo-thermal energy, tidal energy, solar energy and bio-gas energy and grant-in-aid programmes of CBIP. Apart from

augmenting the capabilities of the CPRI in its role of advising the government on performance specifications and standardisation and quality assurance, the CPRI is being reorgansied with a view to undertake enhanced testing and research activities relevant to the power sector.

Petroleum & Petrochemicals

19.123. S & T efforts in this area were rather limited until recently. With the importance attached to the development of the growing petroleum industry, it is now necessary to prepare a perspective S & T plan, including oil exploration, especially in the offshore areas 'production' refining and product and process development of petroleum as also petrochemicals based materials. The strategy to be adopted with regard to import and adaptation of technology, and orientation of the technology development programmes of the industry as a whole in a coordinated manner, inconsonance with need for self reliance in this area has also to be defined.

19.124. R & D Programmes during the Plan period envisage strengthening the technology base related to scaling up of laboratory knowhow, petrochemical processes, petroleum products, studies related to development of reservoir engineering, tools and techniques for enhancing oil recovery from known fields, problem solving efforts in drilling technology and drilling tools development, and geoscientific research pertaining to oil exploration. A major R & D complex has been set up under the Indian Petrochemicals Ltd.

Health and Family Welfare

19.125. The investment in the R & D activities in the Health Sector has been rather meagre in the past Plan periods. R & D efforts have been undertaken to a limited extent by several institutions concerned with problems of eradication of diseases, post-graduate teaching and training institutions and by the Indian Council of Medical Research in its research institutions. These research programmes however, have not been on the basis of any deliberate planning based on a careful assessment of the country's needs. Recently, the Indian Council of Medical Research has examined the situation and identified four priority areas into which the research support of ICMR will be purposefully reoriented viz., communicable diseases like malaria, T. B., leprosy, cholera, filariasis, kala-azar, family planning and fertility control, nutritional metabolie and degenerative diseases prevalent in the country; and the development of a health delivery system. It is recognised that research into many of our pressing health problems is likely to generate a great deal of basic and fundamental work, and thus likely to advance the frontiers of knowledge also.

Science and Technology Plan Outlays

19.126. The outlay for Science and Technology efforts in the Plan programmes are broadly categorised under two groups. Under the first category are the outlays pertaining to the RDD programmes of the Departments of Atomic Energy and Space and the Department of Science and Technology, including the Council of Scientific and Industrial Research. The total outlays for these Departments constitutes the S & T outlay earmarked specifically as such in the Plan. In the second category are the outlays for S & T programmes in other sectors, which forms a part of the total outlays in the respective sectors. A total picture of the S & T outlay under all Ministries is presented in Annexures III & IV. In addition to the Plan outlays, expenditure is also incurred under non-plan head in different sectors/agencies and departments on S & T efforts : this also includes the deployment of internal resources for S & T programmes by the public sector undertakings. Annexure III gives the expenditure on plan programmes during the 4 year period 1974—78 as also the total expenditure inclusive of non-plan. The Plan outlays on S & T during 1978—83 and estimate of the likely non-plan expenditure on S & T programmes during the same period are indicated in Annexure IV. Some salient points may be noted :

(a) the S & T efforts in the Ministries other than the agencies (AEC, ISRO, DST/CSIR, ICAR) have shown some increase due to planned efforts during the last 5 years. This is seen from the fact that while these Ministries accounted for 15 per cent of the total public expenditure on S & T in 1974-75 they would account for 25 per cent in 1978-79. The progress however, is very uneven.

(b) the Ministries other than agencies would account for 34 per cent of the S & T Plan outlay (1978—83) compared to the 23 per cent in the 5th Plan (1974—78).

(c) the S & T outlays in some of the public sector undertakings have started picking up as a result of planned efforts. It has increased from 3.7 per cent in 1974-75 to about 11.8 per cent in 1977-78.

(d) the S & T efforts in several Ministries/Public sector undertakings are however, still not commensurate with the economic activity/scale of services in their respective sectors. It is expected that the approach indicated earlier in this chapter will help to correct the situation in the coming years.

ANNEXURE I

Expenditure on R & D in Relation to GNP and Population

Sl No.	Head	1958-59	1968-69	1973-74	1976-77
(0)	(1)	(2)	(3)	(4)	(5)
I.	Expenditure on R & D and related S & T activities (Rs. Crores)				
	1. Central Sector	27.66	109.60	199.05	329.13
	2. State Sector	1.00	11.99	24.13	35.00*
	3. Private Sector	0.15	9.85	30.35	47.00*
	TOTAL	28.81	131.44	253.53	411.13
II.	GNP at current prices (Rs. crores)	12,600**	30,293	53,704	69,047@
	Expenditure on R & D as % of GNP	0.23	0.43	0.47	0.60
III.	Total Population (crores, June-end)	41.5*	51.6	57.5	61.0
	Per capita expenditure on R & D (Rs.)	0.69	2.55	4.41	6.74

*Estimated

**NNP

@Quick Estimate.

Sources of Data :

1. Expenditure on R & D : Department of Science and Technology (Hand Book on R & D Statistics, 1974-75), for first three years. Planning Commission, for the year 1976-77.
2. GNP : Central Statistical Organisation (National Accounts Statistics) and Economic Survey 1977-78.
3. Population : Registrar General of India (Monthly Abstract of Statistics, Oct. 77, CSO)

ANNEXURE II

Expenditure on R & D in Industry

Sl. No.	Industry	1974-75	1975-76	1976-77	1977-78
(0)	(1)	(2)	(3)	(4)	(5)
					(Rs. Crores)
A.	Expenditure on in-house R & D				
	I. Central Sector (Min/Deptt.)				
	1. Communications	3.11	5.38	7.52	10.69
	2. Heavy Industry	2.39	3.73	5.45	19.60
	3. Industrial Development	..	0.42	1.06	1.85
	4. Coal	..	..	1.25	1.25
	5. Steel	0.22	0.61	0.71	1.97
	6. Mines	..	0.02	0.55	1.61
	7. Petroleum and Chemicals	2.12	2.96	4.25	10.54
	8. Deptt. of Science & Technology	0.50	1.10	1.10	1.45
	TOTAL : I	8.34	14.22	21.89	48.96
	II. Private Sector	35.68	42.00*	47.00*	
	TOTAL I & II	44.02	56.22	68.89	
B.	Total Expenditure on R & D				
	I. Central Sector	229	294	329	413
	II. Private Sector	36	42*	47*	
	TOTAL I & II	265	336	376	
C.	Expenditure on in-house R & D in industry as % of total expenditure on R & D (%)				
	(a) Central Sector	3.7	4.8	6.7	11.8
	(b) Total (Central plus Private)	16.6	16.7	18.3	

*Tentative.

Source : 1. Data on Central Sector—Planning Commission.

2. Data on Private Sector—Department of Science & Technology.

ANNEXURE III

Expenditure on S & T, 1974—78

(Central Sector)

Sl. No.	Agency/Deptt/Min.	Plan			Total (Plan + Non-Plan) 1974-78
		1974-75 (Actuals)	1977-78 (AE)	1974-78 Total	
(0)	(1)	(2)	(3)	(4)	(5)
					(Rs. crores)
A.	**S & T Agencies**				
1.	Atomic Energy (R & D)	18.24	34.90	111.27	228.48
2.	Space	17.26	28.64	92.18	151.27
3.	DST	3.83	16.50	41.73	123.16
4.	CSIR	9.76	18.50	54.14	158.99
	TOTAL 'A'	49.09	98.54	299.32	661.90
	B. S & T Component under Ministries/Deptts.				
5.	Supply (NTH)	0.02	0.44	0.74	3.21
6.	Heavy Industry	0.39	7.60	12.67	31.17
7.	Industrial Dev.**	0.06	2.83	5.45	7.45
8.	Steel	0.22	1.97	3.51	3.51
9.	Mines	..	1.61	2.18	2.18
10.	Power	0.40	1.17	2.88	4.55
11.	Coal	..	1.25	2.50	2.50
12.	Petroleum	1.14	6.23	10.57	16.44
13.	Chemicals	..	1.11	1.37	3.43
14.	Electronics	0.74	6.00	11.29	17.61
15.	Communications	1.78	6.43	15.55	26.70
16.	I & B	..	0.09	0.15	0.53
17.	Shipping & Transport	..	0.79	1.15	1.15
18.	Works & Housing	..	0.37@	0.37@	0.37@
19.	Labour	..	..	..	..
20.	TCA-IMD & Instts.	2.05	6.45	13.71	50.67
21.	Health-ICMR	2.54	4.85	14.94	14.94
22.	Agriculture—ICAR @@	14.60	38.74	104.41	172.39
	FRI@@	0.21	1.16	2.11	8.09
23.	Food	0.19	0.63	1.86	3.56
24.	Irrigation	0.01	0.62	0.83	0.83
25.	Education-Unvs*	2.51	6.00	19.32	19.32
26.	Railways	..	..	..	17.35
	TOTAL 'B'	26.86	96.34	227.56	407.95
	GRAND TOTAL	**75.95**	**194.88**	**526.88**	**1069.85**

@Grants in aid to Indian Standards Institution.

@@Including Education and Training.

*Estimated grants from UGC for research and advanced study in science, research fellowships, computer and regional instrument facilities. Does not include RDD under IITs.

**Includes grants-in-aid schemes in jute and textiles funded by Ministry of Commerce upto 1977-78.

Source : Planning Commission.

ANNEXURE IV

Five Year Plan—1978—83—S & T Outlays

S.No.	Agency/Deptt./Ministry	Fifth Plan 1974-79 (Plan Outlay)	Plan 1978-83 (Plan Outlay)	Non-Plan 1978-83 (Outlay)@
(0)	(1)	(2)	(3)	(4)
				(Rs. Crores)
A.	**S & T Agencies**			
1.	Atomic Energy (R & D)	167.13	220.00	210.00
2.	Space	128.27	210.00	116.00
3.	DST	58.96	110.00	145.00
4.	CSIR	81.77	110.00	162.00
	TOTAL 'A'	436.13	650.00	633.00
B.	**S & T component under Ministries/Departments**			
5.	Supply (NTH)	2.10	5.00	9.00
6.	Heavy Industry	28.76	50.50	60.00
7.	Industrial Dev.	11.95	31.77	10.00
8.	Steel	6.62	17.87	1.00
9.	Mines	6.48	18.00	..
10.	Power	8.69	20.00	4.10
11.	Coal	6.39	18.00	8.70
12.	Petroleum	12.08	35.36	23.50
13.	Chemicals	2.35	16.08	3.50
14.	Electronics	18.73	30.00	..
15.	Communications	22.39	40.65	24.20
16.	I & B	0.77	2.40	0.70
17.	Shipping & Transport	2.98	22.74	..
18.	Works & Housing	0.53	1.50	..
19.	Labour	0.15	0.50	..
20.	TCA—IMD & Institutes	19.58	50.00	60.00
	R & D Dte., C.A.	0.38	1.00	0.80
21.	Health—ICMR	21.32	25.00@@@	15.00
22.	Agriculture—ICAR*	153.56	325.00	110.00
	—FRI*	4.70	15.00	9.00
23.	Food	3.20	5.00	2.50
24.	Irrigation	8.48	20.00**	..
25.	Education@@	35.50	85.00	..
26.	Railways—RDSO	..	..	30.00
	TOTAL 'B'	377.69	836.37	372.00
	GRAND TOTAL :	813.82	1486.37	1005.00

@Tentative, estimated figures.

@@Estimated provision for grants-in-aid to Universities by UGC for research and advanced studies in Science, research fellowships computer and regional instruments facilities. Does not include RDD in IITs.

@@@Upto 1978-79 there was no non-plan under ICMR ; there would be an estimated additional outlay of Rs. 15 crores under the non plan, during 1978-83.

*Including education. In 1978-83, there would be additional provision of Rs. 100 crores in the States for research in agriculture.

**Plus Rs. 20 crores for research schemes undertaken by Irrigation Departments in the States.

Note : Includes Plan outlay for operational programmes of Survey of India, NRDC and IMD, grants-in-aid by ICAR to Agricultural Universities. Excludes outlay for research in rubber, coffee, Sericulture, etc.

Source : Planning Commission.

Chapter 20

Other Programmes

Labour Welfare and Craftsmen Training

Labour policies and programmes will have to be formulated and implemented to subserve the Directive Principles of State Policy enunciated in the Constitution. The primacy of the worker in all sectors of economic activity will have to be recognised and protected. The endeavour should be to secure to all workers, agricultural, industrial or otherwise, employment, a reasonable wage and conditions ensuring minimum standard of living. Labour policy would support the main objectives of the Plan to increase oppotunities of employment, reduce disparities and to ensure that the benefits of development reach the lowest three deciles of the population by providing the basic minimum needs to them.

20.2 Planned economic growth can be ensured only with the understanding cooperation of the workmen leading to maintenance and promotion of industrial harmony. The existing legal arrangements would be replaced by a comprehensive law on industrial relations. Apart from this, the need to provide for participation by workers in the management of undertakings has been recognised and it is proposed to formulate comprehensive schemes to provide for participation of workers in decision-making and management at different levels, *viz.*, shop level, plant level and corporate level. A Committee has already been set up to formulate schemes for workers' participation in management and equity. Further in-service training opportunities are to be provided for the workers to enhance their chances of upward mobility.

20.3 As wages and allied questions account for largest number of industrial disputes, a need for an integrated wages, incomes and prices policy has been recognised and such a policy would be worked out early which will *inter alia* indicate steps to be taken for reducing disparities in wages between the various sectors of employment as well as between wages and other incomes. Increasing employment opportunities coupled with extension of benefits of minimum wages legislation to cover all feasible sectors of employment, particularly in the rural and the informal sectors and periodic revision of minimum rates of wages in these employments would be a strategy adopted for raising the levels of consumption and ending destitution.

20.4 In the context of the new employment strategy the craftsmen training programme, the training of skilled workers and technicians as well as employment information and placement systems would be re-structured and strengthened.

20.5 Conditions will be created and facilities provided for the promotion of orgainsations of rural workers not only to prevent exploitation but also enable them to participate effectively in the development processes so as to safeguard and further their interests as well as the interests of the community at large. In view of the highly hierarchical social and economic structures of our rural society, measures for redistributive justice are likely to be thwarted unless backed by oragnisation of rural workers. A policy of active encouragement to small farmers and rural workers' organisations, therefore, becomes necessary. Such organisations should be involved and participate in direct implementation of :

(a) programmes of land reforms and distribution of surplus land;

(b) programmes for developing ancillary-services such as credit, supply of inputs and marketing ; and

(c) programmes concerning employment generation schemes, such as public works, agro-industries and rural craft.

Government of India have ratified the ILO Convention No. 141 relating to organisation of rural workers. In order to fulfil the main objective of the promotion and development of rural workers' organisations, activities of the concerned institutions and agencies at the Centre and in the States would require further strengthening and expansion.

20.6 A direct attack on poverty for the removal of destitution should obviously begin with the identification, emancipation and rehabilitation of bonded labour. The attempts so far in this field have been inadequate even in the matter of survey and identification of bonded labour. The evidence available so far would indicate the wide-spread incidence of the system of bonded labour. The National Sample Survey (32nd Round) will, no doubt, throw up more data. The rehabilitation of the emancipated bonded labour calls for special efforts, backed by adequate funds. A centrally sponsored scheme for the rehabilitation of bonded labour by way of assisting the States in their programmes has been accepted for the year 1978-79. It will be expanded to meet the increasing needs in the next few years.

20.7 Special attention would be given to programmes of women in the work force with a view to increasing both the employment opportunities and earning